# THE LANCET

**A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.**

*Telegrams*—LANCET, WESTRAND LONDON *Telephones*—GERRARD 4314 & 4315 *Offices*—423, Strand, London, W.C.2

No. XIII. OF VOL. II., 1925. **No. 5326. Vol. CCIX.** LONDON, SATURDAY, SEPTEMBER 26, 1925. Founded 1823. Registered as a Newspaper. Published Weekly. **Pp. 120—Price 1s.** Annual Subscription Inland £2 2s. Abroad £2 10s



## OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 4.

Now Ready. Second Edition. Demy 8vo. Pp. x. + 525. Price 12s. 6d. (postage 9d.).

**PITFALLS OF SURGERY.**
By HAROLD BURROWS, C.B.E., M.B., B.S. (Lond.), F.R.C.S.; Surgeon, Gosport War Memorial Hospital; late Hunterian Professor, R.C.S.

London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden.

FIFTH EDITION. Demy 8vo. Pp. x. + 242. With 42 Illustrations. Price 10s. 6d. net (postage 9d.).

**SQUINT: ITS CAUSES, PATHOLOGY, AND TREATMENT.** By CLAUD A. WORTH, F.R.C.S. Eng., Consulting Surgeon, Royal London Ophthalmic Hospital.

Baillière, Tindall & Cox, 8, Henrietta-street, London, W.C. 2.

## SAUNDERS'

NEW BOOKS.

See 'Saunders' Advertisement on Page 3.

**BY LIEUT.-COL. ROBERT HENRY ELLIOT,**
M.D., B.S. Lond., F.R.C.S. Eng., I.M.S. retd.

**A TREATISE ON GLAUCOMA.**
2nd Edition, Revised and Enlarged. 30s. net.

**TROPICAL OPHTHALMOLOGY.**
With 7 Plates and 117 Illustrations. 31s. 6d. net.
Spanish and French Editions, 1922.

**THE CARE OF EYE CASES:** 12s. 6d. net.
**A MANUAL FOR NURSES, PRACTITIONERS, AND STUDENTS.**
Oxford University Press.

**GLAUCOMA:** 4s. net.
**A HANDBOOK FOR THE GENERAL PRACTITIONER.**

**THE INDIAN OPERATION OF COUCHING FOR CATARACT.**
7s. 6d. net. H. K. Lewis and Co. Ltd.

**BY C. HAMILTON WHITEFORD,**
M.R.C.S., L.R.C.P.

SURGICAL "DONT'S" (AND "DO'S"). Price 3s. net.
"The keynote of the articles is common-sense."—GLAS. MED. JL.
"We have seldom seen mature surgical judgment better portrayed."—MED. WORLD.

ACUTE APPENDICITIS. Price 4s. net.

London: Harrison & Sons, Ltd., 44-47, St. Martin's-lane, W.C. 2.

In the Press. With 62 Illustrations. Demy 8vo.

**MANIPULATIVE SURGERY.**
PRINCIPLES AND PRACTICE.
By A. G. TIMBRELL FISHER, M.C., F.R.C.S.Eng., late Hunterian Professor, Royal College of Surgeons of England; Surgeon (with charge of Out-patients), Seamen's (Dreadnought) Hospital, Greenwich, &c.

London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

*DR. MARIE STOPES' IMPORTANT WORK.*

**CONTRACEPTION**
(BIRTH CONTROL).
ITS THEORY, HISTORY, AND PRACTICE.
A MANUAL FOR THE MEDICAL AND LEGAL PROFESSIONS.
BY MARIE CARMICHAEL STOPES, D.Sc., Ph.D.
With Introductions by Sir WILLIAM BAYLISS, M.A., D.Sc. Oxon. and others.
25th thousand.

*Medical Times.*—"The book is unique and marks a new era."
*The Lancet.*—"Much of the evidence contained in the book is quite unobtainable elsewhere."

Demy 8vo. Cloth. Pp. xxiv. + 416. With 4 full-page plates 12s. 6d. net; post free—inland, 13s. 3d.; abroad, 14s.

This book is the first manual on the subject, and is packed with both helpful and interesting matter and much that is new and noteworthy.

*Should be read by all members of the Clerical and Scholastic Professions.*

London: John Bale, Sons & Danielsson, Limited, 83-91, Great Titchfield-street, Oxford-street, W.1.

**ON THE BREAST.**
By DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D., Ch.M., F.R.C.S. Ed. and Eng.

Royal 8vo. 456 pp. 2 Plates, 166 Illustrations. 30s. net.

LANCET.—"The book is packed with accurate clinical observations and bears evidence throughout of extensive clinical experience and wide reading on the part of the author."

Wm. Heinemann (Medical Books) Ltd., 20, Bedford-street, London, W.C.2.

JUST OUT.

**DISEASES OF THE RECTUM AND COLON**
AND THEIR SURGICAL TREATMENT.
BY
P. LOCKHART-MUMMERY,
F.R.C.S.ENG., M.A., M.B., B.C.CANTAB.,
Senior Surgeon to St. Mark's Hospital.

Over Two Hundred Plates and Illustrations. Price 25s.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Ready October 1st, New Edition.

**TAYLOR'S PRACTICE OF MEDICINE**

Edited by E. P. POULTON, M.D., with Sections on Neurology by C. P. SYMONDS, M.D., and on Skin by H. W. BARBER, M.B., F.R.C.P.

THIRTEENTH EDITION. 1063 pages. 48 Plates (8 Coloured). 92 Text-figures.
Price **28s. net**; postage 9d.

Please send now ONE GUINEA and secure a reserved copy.

**THE MEDICAL DIRECTORY for 1926** 50,000 Names, 2,200 pages.

**London: J. & A. CHURCHILL, 7, Great Marlborough Street, W.1.**

# DROITWICH, THE BRINE BATHS SPA

PRACTICALLY IN THE CENTRE OF ENGLAND with excellent railway services, and only 2½ hours from Paddington, makes a direct appeal to invalids. Situate in a charming district and possessing the strongest known saline waters, it may be said to be unique, and is attracting the attention of medical men far and near.

The baths are especially valuable for the rheumatic group of diseases, and are all given in the Natural Brine pumped direct from the Springs. Reclining Baths, Douche, Aix Douche, Needle, Vapour, Aeration Baths, and Nauheim treatment; also three magnificent Brine Swimming Baths.

*Illustrated Booklet of treatments, amusements, sports, etc., from Joint Managers, 3, Baths Offices, Droitwich.*

**COMPLIMENTARY FACILITIES TO MEDICAL PROFESSION.**

# Use LESLIES ZŌPLA Plaster

**FOR PERFECT RESULTS**

Tenaciously Self-adhesive, really Non-irritating, Antiseptic.

**IT STANDS THE STRAIN**

ON LIGHT AND HEAVY CLOTHS, WHITE OR FLESH. ALSO ON HOLLAND. ALL WIDTHS AND SIZES.

*Write for Samples.*

**USE ALSO OUR HOLLAND STRAPPING.**

**LESLIES LTD., High Street, Walthamstow, LONDON, E.17.**

VALENTINE'S
PREPARATION
NUTRIO PRIME
MEAT JUICE.
The result of an original Process of Preparing Meat, and extracting its Juice by which the elements of nutrition are obtained in a state, ready for immediate absorption.
DIRECTIONS.-Dissolve one teaspoonful of the Preparation in two or three tablespoonfuls of cold or warm water. The use of boiling water changes the character of the preparation.

# Valentine's Meat-Juice

**For Quieting the Irritable Stomach in Pregnancy, for Rapidly Restoring the Vital Forces in Hemorrhage, for Sustaining and Strengthening in Long and Exhausting Labor, Valentine's Meat-Juice** is Extensively employed in

**Obstetrical Practice**

**Dr. M. DeCristoforis,** *Prof. Lecturer on Midwifery and Gynecology, Milan, Italy:* "The preparation, VALENTINE'S MEAT-JUICE, has been successfully used by me in a serious case of acute puerperal hemorrhage. The patient could take no food or drink. VALENTINE'S MEAT-JUICE was completely retained and restored very promptly the strength and the cardiac impulsion."

**Dr. E. Duloroy,** *Physician Accoucheur to the International Hospital, Paris, France:* "A young accouchée, in a very weak condition and suffering from stomach trouble, could retain no food, but was able to assimilate VALENTINE'S MEAT-JUICE given at first in small doses. An improvement was quickly visible, the patient recovered her strength and is today in good health."

For Sale by European and American Chemists and Druggists.

**VALENTINE'S MEAT-JUICE COMPANY,**

D 135 **RICHMOND, VIRGINIA, U. S. A.**

# THE LANCET

No. 5326. LONDON, SATURDAY, SEPTEMBER 26, 1925. CCIX.


# CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.


**A DISSERTATION:** "De Minimis." By ARTHUR EDMUNDS, C.B., M.S., F.R.C.S.—*(Illustrated)* .. 633

**ORIGINAL ARTICLES.**

A Clinical Study of Diabetic Coma. By W. W. PAYNE, M.B., B.S., and E. P. POULTON, M.D., F.R.C.P. 638

The Transmissible Bacterial Lysin and Its Action on Dead Bacteria. By FREDERICK W. TWORT.. 642

Cancer and Acquired Resistance to Tubercle. By THOMAS CHERRY, M.D., M.S. ..... 644

Selection of Cod-liver Oils for Medicinal Use. By Prof. J. C. DRUMMOND, D.Sc., F.I.C. ..... 679

**CLINICAL AND LABORATORY NOTES.**

Bakers' Dermatitis. By N. HOWARD MUMMERY, M.R.C.S. ..... 647

Intradural Abscess Secondary to Frontal and Ethmoidal Sinusitis. By H. ALEXANDER COWAN, M.R.C.S. ..... 648

**REVIEWS AND NOTICES OF BOOKS.**

The Chemical and Physiological Properties of the Internal Secretions. By Prof. E. C. Dodds, Ph.D., D.Sc., M.B., and F. Dickens, M.A., Ph.D. ... 649

Anatomy of the Root Canals of the Teeth of the Permanent Dentition. By Prof. Walter Hess, M.D., D.D.S. Anatomy of the Root Canals of the Deciduous Dentition and the First Permanent Molars. By Dr. Med. Dent. Ernst Zürcher ..... 649

Bacteriology for Dental Students. By R. B. Hervey Wyatt, M.B., D.P.H. ..... 650

The Mathematics of Dental Prosthetics. By F. W. Rapp ..... 650

Fair Winds and Foul. By Frederick Perry..... 650

Interpretacion de las Apéndicitis. By Dr. Juan Mariñon ..... 650

Quarterly Journal of Medicine ..... 651

British Journal of Surgery. 651

**REPORTS AND ANALYTICAL RECORDS.**

B.D.H. Capillator.—Kharsulphan.—Cream of Nujol.—Noctal.—Mead's Recolac ..... 654

**LEADING ARTICLES.**

THE PROBLEM OF THE MENTALLY DEFECTIVE.. 655

LONDON WATER ..... 655

A CONFERENCE ON DRUG STANDARDS..... 656

THE LATE SIR FRANCIS DARWIN ..... 657

**ANNOTATIONS.**

The Surgeon as a Technician ..... 657

Notifiable Diseases Throughout the World.. 658

The Rotunda Hospital Report..... 658

Pleural Empyema..... 659

Medical Defence ..... 659

Fungi ..... 660

Pneumococcus Immunity . 660

Tuberculosis in the Italian Navy ..... 661

Chronic Peptic Ulcer in Children ..... 661

The late Dr. Louis Starr .. 661

**MODERN TECHNIQUE IN TREATMENT.**

CXL.—The Surgical Treatment of Exophthalmic Goitre: The Operation and its Dangers. By T. P. DUNHILL, C.M.G., M.D. ..... 662

**SPECIAL ARTICLES.**

Public Health Administration. Administrative Machinery in European Countries: I. The Netherlands, II. Belgium, III. Spain.—*(To be continued)* ..... 652

American Hospitals. By LIONEL G. PEARSON.— *(Illustrated)*..... 663

Industrial Hygiene: Amsterdam Congress ... 667

Ireland: Irish Free State and the Medical Register. —The Senate Election.. 668

**PUBLIC HEALTH SERVICES.**

Reports of Medical Officers of Health: Sheffield.—Edinburgh.—Aberdeen . 669

School Medical Service: Cardiff.—Hull.—Leeds.. 671

Infectious Disease in England and Wales .... 672

**THE SERVICES.**

Royal Naval Medical Service. — Royal Army Medical Corps.—Royal Air Force.—Indian Medical Service: The Future of the Service.—Tinned Food in the British Army..... 672

**CORRESPONDENCE.**

The Control of Venereal Diseases (Dr. Robert Forgan)..... 673

Rheumatic Infection in Childhood (Dr. C. E. Sundell, Dr. G. Arbour Stephens) ..... 674

Persistent Diarrhœa in Phthisis (Dr. H. de Carle Woodcock)..... 674

The Geographical Distribution of Heart Disease (Prof. A. E. Boycott)—*(Illustrated)*..... 675

"Smalarina" in Malaria (Prof. Guido Cremonese) 675

Journals for Medical Missionaries (Mrs. Janet Bradbury) ..... 676

MacLean's "Lag" Blood-Sugar Curve (Dr. R. Carrasco-Formiguera)... 676

Luminal in Epilepsy (Dr. S. Grossman)..... 677

**MEDICAL NEWS.**

Hospital Aids ..... 644

Tilbury Seamen's Hospital 654

Infant Care..... 661

A Conference on Libraries..... 663

Manchester: Post-graduate Courses ..... 668

Fellowship of Medicine and Post-Graduate Medical Association..... 677

Charing Cross Hospital Medical School ..... 677

University of London: University College..... 677

Lectures at King's College ..... 677

Imperial Social Hygiene Congress ..... 677

Cork Dental Hospital .... 677

London Medical Exhibition 677

Donations and Bequests.. 677

**NOTES, COMMENTS, AND ABSTRACTS.**

Public Health in Bombay. 680

An Unusual Career ..... 681

Riviera Travel ..... 681

Apparatus for Actino-Therapy ..... 681

A "Single-Handed" Square Knot—*(Illustrated)* ..... 682

"Dorma" Ear Pads ..... 682

The Unmarried Mother ... 682

A Useful Catalogue..... 682

The Private Counsellor ... 682

Medical Diary ..... 678

Appointments ..... 678

Vacancies ..... 678

Births, Marriages, Deaths 678



## THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY LIMITED.

(FOUNDED 1892.)

**Registered Office: VICTORY HOUSE, LEICESTER SQUARE, W.C.2.**

*Telegrams:* "MEDICAVERO WESTRAND, LONDON." *Telephone:* REGENT 611.

President: Sir JOHN ROSE BRADFORD, K.C.M.G., C.B., M.D., F.R.C.P., F.R.S.
Treasurer and Chairman of Council: C. M. FEGEN, M.R.C.S., L.R.C.P., D.P.H.
Trustees for the Reserve Fund:
Sir R. DOUGLAS POWELL, Bart., K.C.V.O., M.D., F.R.C.P. Sir ANTHONY A. BOWLBY, Bart., K.C.B., K.C.M.G., K.C.V.O., F.R.C.S. Sir HARRY BALDWIN, C.V.O., M.R.C.S., L.D.S.

The Society was founded for the following purposes: To protect, support and safeguard the character and interests of legally qualified Medical and Dental Practitioners; to advise and assist Members of the Society in matters affecting their professional character and interests; and to indemnify them in regard to actions, etc., undertaken on their behalf.

**SUBSCRIPTIONS.** There is an Entrance Fee of 10s., and an Annual Subscription of £1.

The Invested Funds of the Society exceed £35,800. The Society is fully insured to an unlimited extent against all adverse costs and damages which may be awarded against Members in any action which the Society undertakes on their behalf.

*Forms of application for Membership and full particulars may be obtained from the Secretaries at the above address.*

JUST PUBLISHED.

*FOURTH EDITION. Crown 8vo. 1000 pp. + xv. Fully Revised and Enlarged.* **21s.** *net; postage 9d.*

# SYNOPSIS OF MEDICINE

**For Practitioners and Students.**

**By H. LETHEBY TIDY, M.A., M.D., B.Ch. (Oxon.), F.R.C.P. (Lond.),**

*Assistant Physician, St. Thomas's Hospital; Physician, Royal Northern Hospital.*

*This little volume has been extraordinarily well received. That a fourth edition has been called for within five years is sufficient proof of its great and permanent value.*

"Far ahead of any medical synopsis it has been our lot to encounter."—LANCET.

**Bristol: JOHN WRIGHT & SONS Ltd.** **London: SIMPKIN & CO. Ltd.**

JUST PUBLISHED.

**A NEW EDITION (3rd).**

## THE MECHANISM and GRAPHIC REGISTRATION of the HEART BEAT

**By SIR THOMAS LEWIS.**

**Price 50/- net. Postage 1/-.**

*Specimen pages and abridged list of contents post free*

**SHAW & SONS, LTD., Medical Publishers, 7, 8 & 9, Fetter Lane, LONDON, E.C. 4.**

## STAMMERING

**W. J. KETLEY, "Tarrangower," Brondesbury, N.W.6**

(Telephone: Willesden 435.)

30 years colleague of late B. BESLEY, Brampton Park, Huntingdon.

Those interested in the subject should write for his book, which will be sent post free.

## TRUSS MAKERS.

**MATTHEWS BROS., 10, New Oxford Street, London, W.C.1**

Established 1840. Telephone: Museum 1017.

**PERSONAL ATTENTION GIVEN TO ALL CASES.**

*DIFFICULT CASES A SPECIALITY*

## "GAMGEE TISSUE"

**Sole Proprietors and Manufacturers:**

**ROBINSON & SONS, Limited, Chesterfield.**

## STAMMERING, SPEECH DEFECTS.

BEHNKE METHOD. Estab. 1882. CASES, non-resident, treated at 39, Earl's Court Square, S.W.5, and, in residence, in the Summer holidays at Miss Behnke's house on the Chilterns.

"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times.*

"Thoroughly physiological principles."—*The Lancet.*

"The method is scientifically correct and perfectly effective."
*Guy's Hospital Gazette.*

**"STAMMERING, CLEFT PALATE, SPEECH, LISPING."** 3s. 9d.
of Miss BEHNKE, 39, Earl's Court Square, S.W.5.

## That Book you Want!

FOYLES have a large Department for Medical and Surgical Works (Secondhand and New). They have also twenty other Departments in which are to be found books on every conceivable subject. Each Department has its own catalogue. Write indicating requirements or interests and suitable catalogues will be sent post free. Books sent on approval.

*Books Purchased.*

**FOYLES, 121/5, Charing Cross Rd., LONDON.**

## DISPENSING BOTTLES

**MEDICAL FLATS, VIALS, POISONS, ETC.**

**Good Quality, Accurate Measure**

at

**LOWEST REDUCED PRICES**

Prompt attention to Country Orders.

*PRICE LIST SENT ON APPLICATION*

ESTABLISHED 100 YEARS

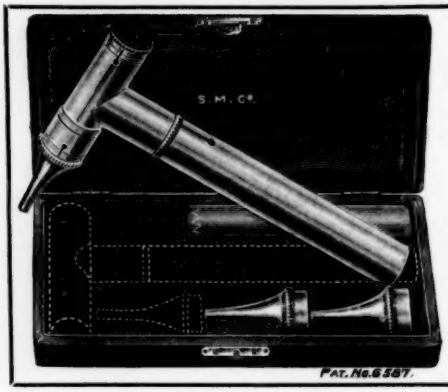
**I. ISAACS & CO.**

**NORTH LONDON GLASS BOTTLE COMPANY**

*London Office:* 106, MIDLAND ROAD, N.W. 1.

*Warehouse and Stores:* London Midland & Scottish Railway Goods Depot, St. Pancras.

*Telephone:* Museum 4209. *Telegrams:* Isaglasbot, Kincross, London.




THE

## "NEW BARTON" Electric Auriscope

(PATENT)

Price, complete in Leather Case, with Spare Battery, **25/-**

***We shall be pleased to send on 7 days' approval.***

**Our 1000-page Illustrated Catalogue of Surgical Instruments, etc., free on application**

**THE SURGICAL MANUFACTURING CO., LTD.** 83-85 Mortimer St., LONDON, W.1

*And at—*

**Scotland:** 89 West Regent St., GLASGOW.

**Northern Ireland:** 14 Howard St., BELFAST.

**Southern Ireland:** 39 Kildare St., DUBLIN.

**Canada.** 27 Dundas St. EAST TORONTO.

**South Africa:** 262 Smit Street, JOHANNESBURG.

**Australia:** 31 King Street, MELBOURNE.

# A Dissertation:
## "DE MINIMIS."

BY ARTHUR EDMUNDS, C.B., M.S. LOND., F.R.C.S. ENG.,
SURGEON TO KING'S COLLEGE HOSPITAL.

WHEN surgeons visit each other's operating theatres, they go not so much to discuss matters of great moment, as in the hope of picking up wrinkles and learning devices, often too trival to form the subject for a paper, but yet of practical interest. This must stand as my apology for this paper, in which I have collected a number of such trivialities. These are often unpublished, either because their originator thinks they are too trivial to be worth noting, or because he is uncertain whether they are original or not.

What follows may be original or not, but it is a selection of practical devices which I have found out for myself; and their value is not lessened if others have done the same and employed them for years. I would like to suggest that other surgeons should follow this example and string together the seed pearls of their wisdom as well as the more important gems.

### SOME PRACTICAL DEVICES.

#### 1. *On the Removal of Non-absorbable Intradermic Sutures.*

Every text-book describes and illustrates very fully the method of putting in these sutures, but the method of taking them out receives less notice, and, in my experience, sometimes causes trouble. Cut the sutures close to one end of the wound. Next wring a fair-sized round swab out of lotion and press it firmly on the wound. Get a good grip on the stitch and pull firmly without jerking. The swab keeps the wound straight and prevents it wrinkling up and gripping the thread. Usually these sutures come out easily enough, but their removal is always facilitated by the wet swab, and I have been successful in removing the stitch quite easily by this device when repeated attempts to do so without had failed.

#### 3. *On Keeping a Bandage in Position for Wounds of the Neck.*

The illustration (Fig. 2) shows a method of keeping a dressing in place over a wound high up in the neck. Immediately after the operation, while the patient is confined to bed, there is no objection to a bandage which goes over the vertex and round the forehead. When, however, the patient is allowed to walk about and go out of doors such a bandage becomes irksome, especially if it has to be continued for some weeks. Turns of bandage simply applied round the neck soon get into strings, the dressing slips, and the wound is uncovered. I have tried various devices to prevent this, such as sewing "collar supports" into the bandage, but I think on the whole the following is the best method.

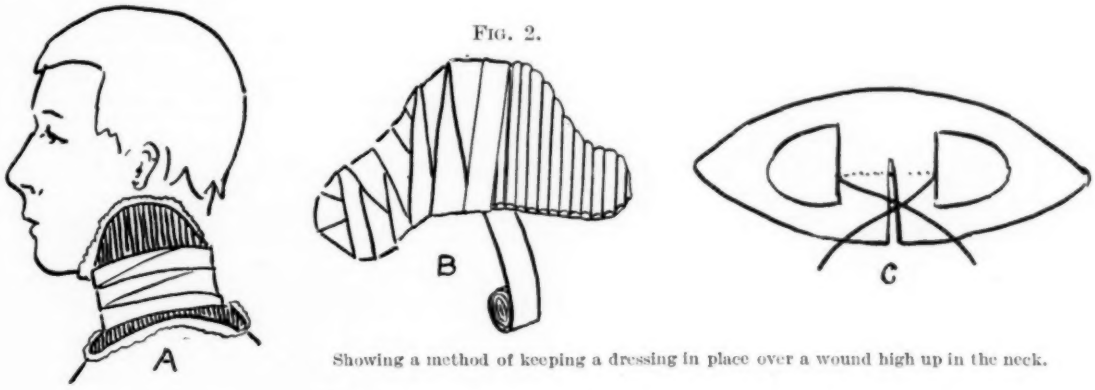
FIG. 1.

Vertical mattress suture.

A piece of ordinary corrugated cardboard is cut to such a length as will allow of its going two-thirds of the way round the neck, and of such a width and shape that it will nearly cover the dressing. For example, when the wound is high up in the neck the card will need a projection running up over the jaw. The cardboard is cut so that the corrugations are parallel to the long axis of the neck. This cardboard is carefully trimmed so that no sharp corners are left which might stick into the patient, and when it has been satisfactorily shaped, is covered by a few turns of bandage (Fig. B). The wound is dressed as the surgeon wishes and then the cardboard is applied to the outside and fixed in place with a few turns of the bandage (Fig. A).

Other materials besides corrugated cardboard can be used, but this material has the advantages of being cheap, light, easily obtained, and fairly rigid in the axis of its corrugation; and if care be taken to let the wool of the dressing overlap the cardboard just a little all round and to have no sharp corners, it makes a very comfortable dressing. As it goes outside everything, there is, of course, no need to sterilise it.

FIG. 2.




Showing a method of keeping a dressing in place over a wound high up in the neck.

The same principle can be used elsewhere: for example, I have kept a dressing over the root of the nose by means of a T-shaped piece of perforated celluloid, such as is used for intracranial work, the top piece of the T going along the forehead and the stalk of the T projecting along the nose. The whole was kept in position by a few turns round the forehead.

Sometimes it is useful to have the splint slightly concave. This is done by cutting the cardboard into

#### 2. *On a Suture for Cleft Palate.*

Some years ago I described a vertical mattress suture which passed deeply through the tissues on both sides of the wound and then returned through the extreme margins of the incision so as to bring both the deep and superficial parts accurately together. I have used this suture extensively, but I have found one of its most valuable applications in the operation for cleft palate. It is quite easy to put in with Lane's needle-holder and gives a very satisfactory apposition of the muco-periosteal flaps (Fig. 1).

the shape shown in Fig. C with two D-shaped openings facing each other. Make a cut midway between the two D's and then pass a strip of bandage through the two openings and tie it at their lower part. This kinks the apparatus and makes it concave. In this case ordinary instead of corrugated cardboard is better.

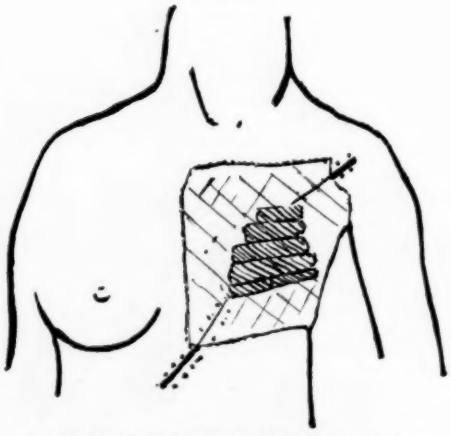
### 4. *On a Nutrient Beef-tea.*

Although milk is so nearly perfect as a fluid food, it is often desirable to have an alternative albuminous fluid food, for example, for patients who dislike milk.

Pound 2 oz. of fillet of beef in a mortar with 1 oz. of cold water, press the resulting paste through a wire sieve with the back of a wooden spoon or a vegetable presser. Return what comes through the sieve to the mortar. Pour into the mortar on top of the pounded meat 6 oz. of boiling bouillon, clear soup, or if nothing better is available, one of the commercial meat extracts. Stir this up and then pass it again through the sieve, which still has some particles of meat entangled in its meshes, which particles get washed through with the broth. The result is a reddish fluid which sets into a jelly after a few hours, and should measure about 8 or 9 oz.; that is to say, the whole of the 2 oz. of fillet of beef are contained in a tumblerful of liquid. The meat is very lightly cooked, but if the bouillon is skilfully prepared there is no raw taste. Other kinds of beef can be used, but they are inferior to fillet, as they contain more fat and fibrous tissue.

I have given this formula to Messrs. Withers, of 20a, Baker-street, who are prepared to supply this beef-tea to order, and as prepared by them it is an extremely palatable product. I have examined it microscopically and find that the beef is reduced practically to its ultimate fibres, and that many of these are actually broken up. Needless to say, this preparation will not keep and must therefore be freshly prepared daily.

FIG. 3.



A method of keeping Thiersch grafts in position.

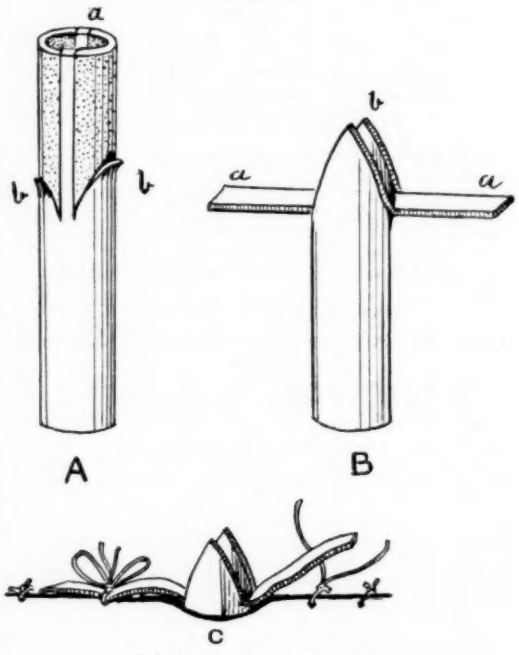
### 5. *On Keeping Thiersch Grafts in Position.*

In Fig. 3 the condition is represented in which the left breast of a patient has been removed for carcinoma and it has been found impossible to bring the skin together. The darkly shaded portion represents the skin grafts which have been applied subsequently. After this has been done a piece of sterilised mosquito-netting is gently laid over the grafts, stretched out flat on the chest wall and fixed in position with collodion all round the wound. The collodion is not painted on to the grafts, but merely on the skin around them, the tension of the netting serving to hold the grafts down. Over this any dressings that the surgeon may fancy can be applied. If there is much discharge this will escape through the mesh of the netting, and it will be found possible to renew the dressing without disturbing the grafts.

### 6. *On the Insertion of Drainage-tubes.*

It is important where a drainage-tube is to be inserted through a stab wound to see that the lines of the stab correspond with the lines of the cleavage of the skin or with the lines of tension of a flap. For example, after total amputation of the breast, if a drainage-tube is put in through a stab wound in the long axis of the body the hole will be dragged open and take a long time to heal. If, on the other

FIG. 4.




A drainage-tube for empyema.

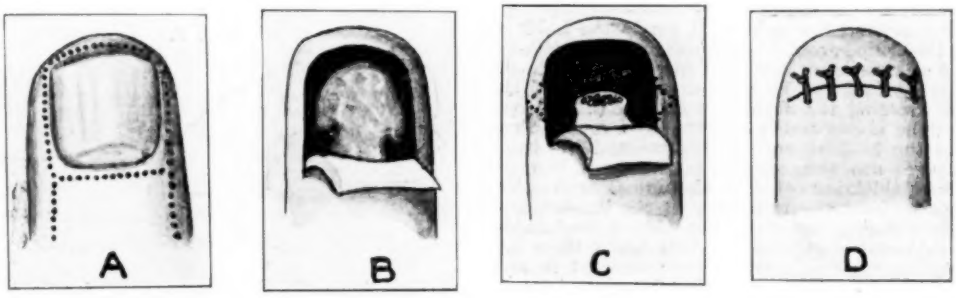
hand, the incision for the drainage-tube is at right angles to the trunk the tension of the flap will tend to close it and it will heal rapidly. In putting a drainage-tube into the centre of an incision, for example after an operation for goitre, it is important to see that the edges of the incision lie evenly around the tube. The best way to do this is to put two sutures in the middle of the incision sufficiently far apart to admit the drainage-tube and so placed that there is exactly the same amount of skin above and below the incision. When the tube is removed the two edges fall together naturally, whereas if one had been a little longer than the other there would have been an ugly scar. After removing a tube, one sometimes desires to press the part to find out if there is any collection of pus within it. In the case of wounds of certain parts, for example of the neck, this can often be done by holding a swab against the wound and directing the patient to do the pressing for himself. Nervous patients appreciate this.

### 7. *On a Drainage-tube for Empyema.*

This is a slight modification of a device which I have already published. The drainage-tube of the desired length and size is cut as in Fig. 4, A, two oblique cuts mark out the angular flaps (*b*), and the ends of these two cuts are joined to the open end of the tube by two pairs of cuts, marking out the two long narrow flaps (*a*), the dotted part coming away, leaving a tube as shown opened out in B. The tube is put into position and a stitch passed through the edges of the wound on either side, its ends being

tied and left long. These long ends are then tied round the long flaps (*a*) holding the tube firmly in position. The triangular flaps hold the edges of the wound aside and prevent them from falling over the end of the tube. To remove the tube the bows are untied, the tube washed, replaced, and the bows retied (C). The sutures hold for a week or ten days, at the end of which it is usually easier to retain a tube of the ordinary pattern.

FIG. 5.

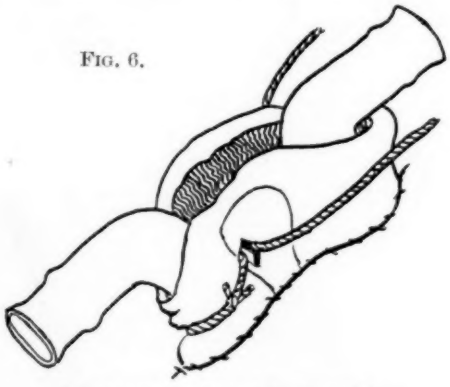



A method of removing finger- and toe-nails.

*8. On Removing Finger- and Toe-nails.*

The operation of removing a nail is usually called "avulsion," a term which suggests violence. The best way to do this little operation is to use a thin flat-bladed blunt dissector; the one sold under the name of MacDonald's raspatory is an excellent one. This is gently insinuated under the nail and moved from side to side so as to gradually separate the nail from its bed. The nail can then be lifted up and removed with a minimum of laceration of the underlying structures, and, consequently, a more rapid and less painful healing. The operation takes a little longer; but as the patient is, or should be, always under an anæsthetic this is of no importance.

FIG. 6.



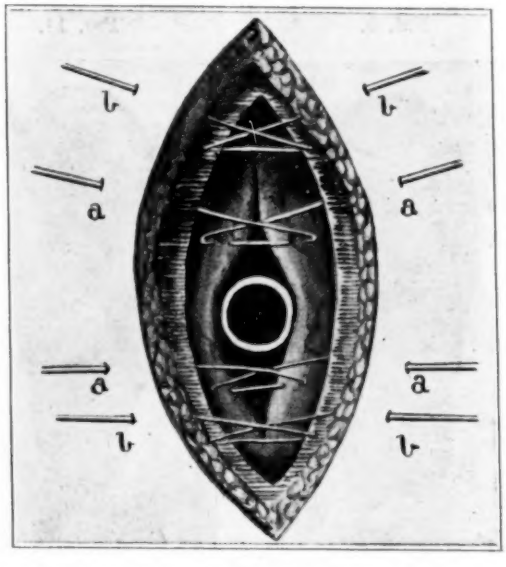
Showing the colotomy tubes in position.

In some cases, for example when the nail of the great toe is enormously overgrown, it is necessary to remove it completely, matrix-bed and all. The method illustrated in Fig. 5 will be found useful. The incisions are made as in A, surrounding the nail and running up on the phalanx for about half an inch. The little flap over the nail-bed is then dissected up and the nail-bed matrix and nail excised, leaving the terminal phalanx covered with a little fibrous tissue at the bottom of the wound as shown in B. The expanded end of the terminal phalanx is then cut off with a pair of bone forceps, leaving the condition shown in C. It is now quite a simple matter to sew up the whole wound completely as in D, leaving, when healing is complete, a painless rounded stump well calculated to bear pressure. Sometimes two little ear-like processes will be formed on either side of the incision. These can be removed by excising two little triangular flaps of skin as indicated by the dotted line in C. If the reflected flap over the matrix should prove to be too thin at its edge, this can be trimmed away.

*9. On Inguinal Colotomy.*

I practically always open the bowel in this operation immediately after fixing it in the wound. I carefully suture the bowel and the intervening mesentery to the skin with fine catgut and then pass two stout silk ligatures through the mesentery without interlocking them. I then pack round the bowel with gauze wet in 1 in 2000 perchloride of mercury to protect the wound. I next slit open the bowel, as shown in Fig. 6, clean it out, and pass a colotomy tube into each end. I then tie the two sutures one round each of the colotomy tubes and the bowel as tightly as possible, so as to hold them in position and completely avascularise the tissue beyond the ligature. As my hands are now soiled I remove my gloves, take away the wet gauze, and replace it by a cyanide gauze dressing wrung out of 1 in 40 carbolic acid. Colotomy

FIG. 7.




Suturing of bladder and abdominal wall after prostatectomy.

tubes of india-rubber are tied over the glass tubes in the usual way. At the end of a week both tubes and the intervening piece of bowel separate cleanly without any hæmorrhage and a very satisfactory colotomy is obtained.

10. *On the Use of Figure-of-8 Suture after Prostatectomy.*

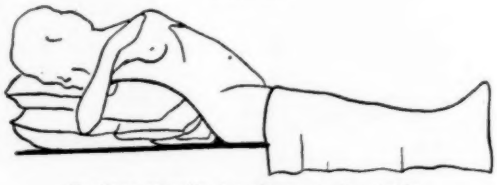
After removing the prostate I am in the habit of closing the wound around the drainage-tube as follows. A stout silkworm-gut stitch is passed through the muscular wall of the bladder on either side of the incision, avoiding the mucous membrane (Fig. 7 (*a*) ). This is done above and below the tube, and the cut edges of the bladder are inverted around the tube. The sutures are then crossed and passed through the whole thickness of the abdominal wall—that which came from the right side of the incision into the bladder coming out on the left side of the incision in the skin and vice versa, so that when these are tightened up the bladder incision is turned in and the whole of the abdominal wound is approximated. But more superficial figure-of-8 sutures, as many as may be necessary, are put through the sheath of the rectus, crossed, and passed out through the skin (Fig. 7 (*b*) ). When all these are tightened the abdominal wall is held well together, the edges of the bladder incision are inverted, and the bladder held well against the deep surface of the wound. These sutures are cut on the thirteenth day and removed on the fourteenth, thus leaving no buried sutures to cause trouble.

## SOME PRACTICAL POINTS ON THE OPERATIVE SURGERY OF THE GALL-BLADDER.

1. In order to bring the biliary passages into a more accessible position, it is usual by some means or other to extend the spine into an arch, the summit of which is at the lower dorsal vertebræ. This may be done either by placing a firm sandbag or a pneumatic pillow behind the patient in the lower dorsal region, by a "bridge" on the operating table, or by using a specially arranged operating table. All these positions are extremely uncomfortable to a conscious patient and are therefore a factor in producing discomfort after the operation. The method I have employed obtains exactly the same angulation of the spine in the lower dorsal region, but with much greater comfort. It is shown in Fig. 8.

After the patient has been laid upon the table he is lifted up almost into a sitting position, and firm pillows or sandbags are pushed tightly up against the lower part of the spine and banked up as far as the lower dorsal region. The patient's head and shoulders

FIG. 8.



Position of patient on the operating table.

are then allowed to fall back to the horizontal position and supported by further pillows. In all, about half a dozen are required. It will be noticed that not only is the angulation secured but that the abdomen is acutely inclined, making an angle of about 45° with the horizontal, so that on opening the abdomen the small intestines drop away to the pelvis and do not intrude upon the field of operation. It is only necessary to persuade a few normal, conscious individuals to try this position and compare it with the older ones to demonstrate how much more comfortable it is. Further, anæsthetists tell me it is a better position from their point of view, as it interferes less with the freedom of respiration. I have used this method now for a long time and have found that it gives good access with all the various incisions for exposure of the gall-bladder. I may mention, in passing, that, like many surgeons, I now usually attack this region through a paramedian incision.

FIG. 9.

The line of the incision through the peritoneum over the gall-bladder.

FIG. 11.

Incision into the gall-bladder with drainage-tube sutured to its margin.

FIG. 12.

Schematic view of the inside of gall-bladder as it would appear if viewed from the hepatic surface.

FIG. 13.

The drainage-tube in its final position.

2. In view of the accidents which have happened to the common duct in excising the gall-bladder, it is taught in most text-books that the dissection should commence over the cystic duct. In a thin patient, with a small gall-bladder, with lax hepatic ligaments, and a broad subcostal arch, this procedure is as easy as it appears to be in the illustrations in the

books on operative surgery. Unfortunately, however, a very large number of these cases are extremely fat, the gall-bladder is enlarged, obscuring the ducts, so that this method is difficult; and in such cases, even when it is possible, it can only be done by using a good deal of undesirable force. It is recommended in such cases that the gall-bladder should be aspirated before removal. In some cases this is, in my opinion,

FIG. 10.

The separation of the gall-bladder completed.

very undesirable and also unnecessary. The statement is made that it is almost impossible to remove the gall-bladder by commencing the separation from the liver at its fundus and at the same time to see distinctly the structures which are ligatured in the neighbourhood of the foramen of Winslow.

In such cases it is generally fairly easy, by incising the peritoneum, to separate the gall-bladder from the liver (Fig. 9), starting at the fundus, care being taken, of course, to carry out the dissection at the proper level, and avoid lacerating the liver or the gall-bladder. The liver can now be held up by a retractor and a gauze pad packed over the raw area of the liver to control the hæmorrhage, if this is sufficient not to interfere with the operation. As a matter of fact, it is very rare that this is the case. The fundus of the gall-bladder is grasped, either with a piece of gauze or, if it is sufficiently lax, with a pair of ring forceps, and drawn downwards towards the right iliac fossa (Fig. 10). The incision between the liver and gall-bladder is then extended through the peritoneum from the lowest point on one side, transversely to the long axis of the gall-bladder until it meets the incision on the other side. It is immaterial whether this transverse part of the incision lies over the duct or over the lower part of the gall-bladder itself. This division of the peritoneum is quite easily carried out, provided that the peritoneum is drawn taut and a sharp knife is used. With a little blunt dissection it is now quite easy to push down the peritoneum between the transverse incision and the common duct. The gall-bladder is now connected only by its duct and its blood-vessels with a small amount of areolar tissue between. The cystic duct is separated from the remainder of the pedicle and traced downward as far as the surgeon thinks desirable. An aneurysm needle is passed around the remainder of the pedicle—that is to say, around the vessels, which are ligatured and divided—care being taken to leave a sufficient amount of tissue on the far side of the ligature to prevent it slipping off. The gall-bladder is left connected merely by the cystic duct which is ligatured and divided in the usual way. If the common bile-duct has not been exposed before, it is easy at this stage to do so, making gentle traction on the cystic duct and pushing the divided peritoneum aside.

To separate the gall-bladder from the liver, starting from the fundus and then to tie a string more or less blindly around a pedicle is certainly a dangerous procedure; but by this method we gain the advantage of a mobile gall-bladder and at the same time one can see exactly what is being ligatured. Even when the transverse incision is made across the lower part of the gall-bladder it is usually quite easy to expose the whole of the cystic duct. Furthermore, if one has the consciousness that the duct has been well and truly ligatured a small escape of bile along the drainage-tube for the first 24 or 48 hours does not give the surgeon any apprehension that his ligature has slipped, as it will be evident that this escape is merely due to the lacerated bile-ducts on the surface of the liver.

3. Drainage of the gall-bladder is an operation less frequently performed to-day than formerly, but there are certain cases in which it is necessary. Some surgeons recommend the suture of the wall of the gall-bladder to the deeper part of the abdominal wall, while others recommend that a tube should be inserted and fastened in with a purse-string, the object of the purse-string being to invert the walls of the gall-bladder as the walls of the stomach are invaginated in a Kader's gastrostomy, so that when the tube is removed the gall-bladder will close rapidly.

Bickham recommends that when the incision into the gall-bladder is slit-like a few points of Lembert's sutures should be inserted and the drainage-tube brought out at the middle of the incision. The purse string method is very easily applicable when the gall-bladder is distended and has lax walls, but it is difficult to carry out in a contracted gall-bladder with thickened walls, especially if a large opening has been made in the gall-bladder in order that the surgeon may explore its interior with his finger, a procedure which, as Rutherford Morison says, should always be carried out. It is a good plan not to incise the gall-bladder actually at its fundus, but starting at a point about half an inch from its attachment to the liver, to carry the incision upwards as far as may be necessary to insert the finger, remove the stones, and clear the ducts (Fig. 11). A drainage-tube about the size of a No. 12 catheter with several holes cut in its side is then pushed along the gall-bladder towards the cystic duct and a non-absorbable suture passed through the gall-bladder and tube. This suture is tied as tightly as possible, so that it will, in the course of a few days, cut through the tissues of the gall-bladder and liberate the tube, with which it ultimately comes away. The incision in the gall-bladder is then closed by several layers of Lembert's sutures, as many rows being inserted as possible, care being taken to tuck in the edges of gall-bladder between the tube and the liver. The greater the amount of enfolding the more certainly will the gall-bladder fall together when the tube is removed and the less risk is there of the formation of a biliary fistula (Fig. 12). The latter figure is a schematic diagram of the incision so sutured, viewed from within.

It is my experience that the discharge of bile in these cases ceases in 24 hours. The drainage-tube leading from the gall-bladder is brought out through the abdominal wall at a convenient point and fastened in position. To do this a silkworm-gut suture is

passed through the skin and tied securely, but not too tightly. The loose ends are again tied together in a reef knot about half an inch from the skin, and the ends are now tied firmly round the drainage-tube (Fig. 13). The drainage-tube can be held very firmly in this way and it will take an appreciable tug to pull it out. Furthermore, by securing the drainage-tube in this way the lumen of the tube is not opened and the bile does not leak into the dressing, but runs away into the receptacle provided for it.

### INSTRUCTION OF STUDENTS.

In order to make diagrams at the bedside I have had made for me sketch blocks of "poster paper" upon which I draw either with a carbon pencil or a "BB" carpenter's pencil, as sold by Winsor and Newton. To demonstrate cutaneous sutures I use spongiopiline. This is a sort of felt on one side of which is a black waterproof layer which represents the cuticle very well. If this is pinned on a blackboard incisions can be made into it and sewn up with thick white silk for class demonstrations. To illustrate plastic operations I use stockinette dress material, which is fastened loosely with drawing pins over a frame. Lines can be drawn on this with soft chalk, and sliding flap and other plastic operations can be readily carried out. The best material for the sutures is the thick real silk which is sold for knitting purposes. For demonstrating intestinal operations I employ a tube made of two thicknesses of flannel—the inside red flannel and the outside white flannel. With this all the ordinary methods of intestinal anastomosis can be quite readily demonstrated.

## A CLINICAL STUDY OF DIABETIC COMA.*

BY W. W. PAYNE, M.B., B.S. LOND.,
PARSON RESEARCH FELLOW;
AND
E. P. POULTON, M.D. OXF., F.R.C.P. LOND.,
PHYSICIAN TO GUY'S HOSPITAL.
(*From the Medical Wards and the Laboratory of Clinical Chemistry, Guy's Hospital.*)

THE following 11 cases are recorded as illustrating some aspects of this complication which are worthy of note, and have a bearing on its present-day treatment.

CASE 1.—P. M., aged 25, male. Admitted under the care of Dr. A. P. Beddard. No history of illness till three weeks before admission. A sore-throat, thirst, and weakness were then noticed, and diagnosed by his doctor as influenza. The thirst and weakness increased, and some polyuria developed; he became constipated, and on the day before admission was drowsy. On admission he was semi-comatose and "dyspnœic," with a pulse of 110 (no note as to volume). The treatment and progress for the first four days are shown in Table I.

TABLE I. (Case 1.)

| Date in Feb., 1924. | Blood. | | Urine. | | | | Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar. | Acetone bodies ($FeCl_3$). | Albumin. | Fluids. | Insulin. units. |
| 6th | 0·54 | — | 10 + C‖ | + + | + + | + | See below. | 50 |
| 7th | 0·147 | 0·063 | 20 + C | + + + | + + | Nil | | 60 |
| 8th | — | — | 34 | — | — | — | | 60 |
| 9th | 0·09 | — | 94 | — | — | — | | 45 |

‖ C = One catheter specimen, volume not measured.

*Fluids.*—6th, 7th: 15 oz. hrly. gluc. and bicarb. rectally and mouth. 8th: Solid food started.

He was discharged "sugar-free" on 25 units of insulin night and morning, and on a fairly liberal diet.

Four months later he was readmitted for investigation. With no alteration in his diet and without insulin he remained sugar-free, and his blood-sugar at 5.30 P.M. was 0·135 per cent. He was discharged on a diet without insulin.

* The chief points in this paper were communicated to a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine.

*Notes.*—Urine: There appears to have been a distinct drop in the volume of urine passed at the onset of coma, since he had been passing large quantities just before. Notwithstanding the considerable quantity of fluid given diuresis did not occur for two days, and then coincided with a complete return to consciousness. Blood-urea: On the second day, when the patient had almost recovered, the blood-urea was still twice the normal value. Subsequent history: This case is remarkable in that so severe a case of diabetes, requiring 50 units of insulin daily to keep the urine sugar-free, should have recovered to such a degree as to permit the omission of insulin, at any rate for the time being.

CASE 2.—E. K., aged 18, female. Admitted under the care of Dr. H. French. History of diabetes for two and a half years, treated by diet. Fourteen days before admission the patient complained of a sore-throat and became constipated. An enema was followed by some improvement. Two days before admission patient collapsed and vomited. The next day there was no improvement, vomiting continued, and there was much thirst. On the day of admission she became dazed, and when admitted she was comatose with some delirium, the respirations were deep and quick, and the pulse rapid and feeble. Treatment and progress are shown in Table II.

TABLE II. (Case 2.)

| Date in Sept., 1924. | Blood. | | Urine. | | | | Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar %. | Acetone bodies. | Albumin | Fluids. | Insulin units. |
| 7th: 8 P.M. | 0·69 | — | 7 | 3·5 | + + | + | See below | 40 |
| 12 P.M. | — | — | 4 | — | — | — | | |
| 8th: 8 A.M. | — | — | 10 | 2·9 | + | — | | 40 |
| 4 P.M. | — | — | 4 | 2·5 | ± | — | | 80 |
| 12 P.M. | — | — | Nil | Tr. | ± | — | | 60 |
| 9th: 8 A.M. | — | — | ½ | Tr. | Nil | + | | 20 |
| 4 P.M. | — | — | ½ | Tr. | " | — | | Nil |
| 12 P.M. | 0·45 | — | Nil | — | — | — | | Nil |
| 10th: 8 A.M. | — | — | 2 | Tr. | Nil | + | | Nil |
| 4 P.M. | — | — | 4 | — | — | — | | |
| 12 P.M. | — | — | Nil | — | — | — | | 20 |
| 11th: 8 A.M. | 0·50 | 0·198 | 4 | F.tr. | Nil. | + | | 40 |

F. tr. = Faint trace.

*Fluids.*—7th: 25 oz. sodii bicarb., 50 oz. gluc., intrav. 8th: 20 oz. sodii bicarb. and gluc. 2-hrly. by nasal tube. 9th: 20 oz. gluc. intrav. 10th: 20 oz. fluid, 2-hrly., rectally.

*Remarks.*—7th: Comatose and vomiting. 8th: (8 A.M.) Conscious; (4 P.M.) still vomiting; (12 P.M.) comatose again. 9th: (8 A.M.) Sweating; (4 P.M.) air hunger, hot skin; (12 P.M.) vomited. 10th: No air hunger. 11th: Air hunger; commencing gangrene right big toe; (4 P.M.) died.

Post-mortem examination showed no naked-eye abnormalities in heart, lungs, kidneys, &c., but gangrene and perforation of the ileum had occurred, and there was some pus in the pelvis.

*Notes.*—Urine: A marked feature in this case was the oliguria. Although the blood-sugar was extremely high, only traces of sugar were passed in the last 73 hours. Albumin was constantly present. The absence of acetone bodies was probably due to the inability of the kidney to excrete them (vide Case 8). Blood-urea: The significance of so high a figure is doubtful, as the patient was moribund, in which condition a high blood-urea is sometimes found.[18] Vomiting: It is extremely difficult to assess the diagnostic importance of this persistent vomiting. It occurred in three other cases of coma (Cases 6, 10, and 11); but in view of the post-mortem findings it is impossible to rule out an intra-abdominal cause, although it is probable that the gangrene and perforation of the ileum was a terminal event comparable with the gangrene of the toe.

CASE 3.—L. B., aged 19, male. Admitted under the care of Dr. Beddard. History of diabetes for one and a half to two years. He had been having 5 units of insulin daily for the five months previous to his admission. On the day preceding admission the insulin was omitted and he had a tooth extracted. By the next day he was comatose, and when admitted there was definite air hunger. The treatment and progress are shown in Table III., with the exception of the fluid given, notes of which are available for the first 24 hours only. During this time 10 oz. saline, containing sodii bicarb. and glucose, were given every hour by nasal tube, and 20 oz. saline subcutaneously and 40 oz. saline rectally.

When discharged the patient was having 25 units three times a day, with a diet containing 2 oz. potatoes and 3 oz. bread. When seen six months later, apparently on the same régime, his blood-sugar was 0·28 per cent., and 120

units of insulin a day were required to render his urine sugar-free. When last seen in March, 1925, he was in excellent health, and his blood-sugar was 0·15 at 2 P.M. He was having only 50 units of insulin a day.

TABLE III. (Case 3.)

| Date in 1924. | Blood. | | Urine. | | | | Units of insulin. |
|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar. | Acetone bodies ($FeCl_3$). | Albumin. | |
| Oct. 25th | — | — | 17(C) | — | — | — | 140 |
| ,, 26th | — | — | 40(C) | 1·25 % | + | ++ | 200 |
| ,, 27th | 0·106 | 0·15 | 27(C) | Nil | — | ++ | 25 |
| ,, 28th | — | — | 45 | + | + | + | 30 |
| ,, 29th | — | — | 30 | Tr. | (+) | + | 45 |
| ,, 30th | 0·408 | — | ? | + | Tr. | Nil | 45 |
| ,, 31st | — | — | 104 | ++ | Nil | ,, | 55 |
| Nov. 6th | 0·269 | 0·032 | 76 | — | Nil | Nil | 120 |

(C) = Catheter specimen.

*Remarks.*—Oct. 25th: Coma. 26th: Drowsy. 27th: Hypoglycæmia. 28th: Drowsy. 29th: Earache and aural discharge.

*Notes.*—Urine: A certain degree of oliguria is to be noted, and diuresis did not start for five or six days, the patient having completely recovered from the coma. Albumin was present until diuresis started. Blood-urea: Even on the third day the blood-urea was over five times the normal value. With complete recovery the blood-urea returned to normal. Coma: In this case although some sugar was given, at the end of 48 hours signs of hypoglycæmia appeared (noisy delirium, sweating, full pulse). On omitting insulin, within 24 hours the patient became drowsy again, as if diabetic coma were impending. Insulin treatment was restarted, less being given than before, and in a few days the effects of the coma had quite cleared up.

CASE 4.—L. S., aged 15, female. Admitted under the care of Dr. Beddard. History of two months' weakness. Tubercle being suspected, the patient was sent to a sanatorium about a week before admission to Guy's. While there she "caught a cold" and became tired and drowsy. She was sent home, and the next day she was admitted almost comatose with air-hunger. (Table IV.)

TABLE IV. (Case 4.)

| Date in 1924. | Blood. | | Urine. | | | | Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar %. | Acetone bodies. | Albumin. | Fluids. | Insulin units. |
| August 27: 9.30 P.M. .. | 0·36 | N.N. | — | — | — | — | See below. | 30 |
| August 28th: 10.30 A.M. .. | 0·24 | — | } 32 | 4 | ++ | + | | 90 |
| 6 P.M. .. .. | 0·076 | — | | | | | | |
| August 29th .. | — | — | 20 | — | — | — | | 30 |
| ,, 30th .. | — | — | 64 | — | — | — | | 45 |
| Sept. 1st .. | — | — | 80 | Nil | ++ | Nil | | 45 |
| Sept. 18th: 5.15 P.M. .. | 0·12 | — | ? | Nil | Nil | Nil | | 40 |

N.N. = Nearly normal.

*Fluids.*—August 27th: 20 oz. gluc. and $NaHCO_3$; stomach-tube. 28th: Fluids ad lib.; no record of quantity.

*Remarks.*—August 27th: Coma. 28th: Recovered consciousness.

*Notes.*—Urine: Slight oliguria is to be noticed. Albumin appears to clear up about the same time that the volume of urine increases. Coma: Although no symptoms of hypoglycæmia were noted, it is evident from the blood-sugar that within a few hours of coming out of diabetic coma the patient is close on an insulin reaction.

CASE 5.—R. E., aged 17, male. Admitted under the care of Dr. Poulton. History of one week's illness, starting with a sore-throat. On admission he was semi-comatose. He had well-marked air-hunger, but his pulse was good. (Table V.)

He was discharged Nov. 13th, 1924, in good health, having 50 units of insulin and an adequate diet. Six months later the urine was sugar-free, and the blood-sugar at 1 P.M. was 0·13 per cent., while he was taking 8 units of insulin at night.

TABLE V. (Case 5.)

| Date in Sept., 1924. | Blood. | | Urine. | | | | Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar. | Acetone bod ies. | Albumin. | Fluids. | Insulin units. |
| 24th: 12 P.M. | 0·55 | 0·06 | 128 | + | ++ | + | | 110 |
| 25th: 1 A.M. | 0·19 | — | 164 | — | — | + | See | 40 |
| 2–5 P.M. | 0·12 | — | — | — | — | — | below. | |
| 26th .. .. | — | — | 88 | + | Tr. | — | | 35 |

*Fluids.*—24th: 100 oz. Saline by mouth for 5 hours. Vomited and fluids discontinued for 5 hours. 25th: 200 oz. Saline $NaHCO_3$ by nasal tube.

*Remarks.*—24th: Coma. 25th: Regained consciousness.

*Notes.*—Urine: No oliguria was present in this case. This probably is associated with the unusually good pulse. Blood-urea: Was twice the normal value, notwithstanding the quantity of urine secreted.

The subsequent history of this case is of interest. He was admitted in May, 1925, passing sugar and a fresh régime was arranged, but he did not keep to his diet. At the end of August he went to bed feeling unwell (no other details obtained), but got up on Sept. 4th, went out, and apparently ate unrestrainedly. He took no insulin that night, and the next day he was sleepy, and insulin was again omitted. Early on the 6th he was readmitted very drowsy, but able to answer questions. Energetic treatment was at once started, but in spite of 160 units of insulin and much fluid he died in a few hours. His blood-sugar shortly before death was 0·49 per cent. He passed no urine after an initial catheter specimen. Post mortem his bladder was empty and the kidneys were large with some fatty changes. No other abnormalities were found.

CASE 6.—M. J., aged 17, female. Admitted under the care of Dr. Beddard. Two or three months' history of lassitude, thirst, loss of weight and poor appetite. On the evening of the day preceding admission she suddenly vomited and became drowsy. The vomiting continued, and the drowsiness increased; on the next day she was admitted completely comatose, with deep but not rapid breathing. (Table VI.)

TABLE VI. (Case 6.)

| Date in 1924. | Blood. | | Urine. | | | | Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar. | Acetone bodies. | n. | Fluids. | Insulin units. |
| May 27th | — | — | 42 | +++ | +++ | | | 80 |
| ,, 28th | — | — | ? | — | — | 0·1 % | See | 45 |
| ,, 29th | 0·245 | 0·024 | ? | — | — | — | below. | 15 |
| May 31st | 0·243 | — | 40 | — | — | Nil | — | 40 |
| June 20th | 0·09 | 0·013 | — | — | — | — | — | 60 |

*Fluids.*—May 27th: 60 oz. per rectum, "several pints" by mouth of saline, with glucose and $NaHCO_3$.

*Remarks.*—May 27th: Coma. 28th: Recovered consciousness. 31st: Aural discharge noted June 6th.

The patient was discharged some weeks later quite fit on a diet and 60 units of insulin a day.

*Notes.*—Urine: The absence of reliable figures prevents any remark on the volume. Albumin was present and disappeared on the complete recovery of the patient.

CASE 7.—I. M., aged 16, female. Admitted under the care of Dr. Poulton. Admitted in coma. She did not regain consciousness, and died the next day. No record as to history was obtained. (Table VII.)

TABLE VII. (Case 7.)

| Date in Sept., 1924. | Blood. | | Urine. | | | | Units insulin. |
|---|---|---|---|---|---|---|---|
| | Sugar. % | Urea. % | Vol. oz. | Sugar. | Acetone bodies ($FeCl_3$). | Albumin. | |
| 7th .. | 0·5 + | 0·135 | ? | + | (+) | + | 40 |
| 8th .. | — | — | ? | ++ | Nil | — | 120 |

*Remarks.*—7th: Coma. 8th: Death.

*Note.*—The main points of interest in this case are the high blood-urea a day before death, and the very small amount of acetone bodies in the urine.

CASE 8.—E. P., aged 29, female. This patient is Case 6 in a previous publication (THE LANCET, p. 777, 1923). Her history dates back two years. She had been having insulin treatment at home for some months. She was there seen by one of us in consultation with Dr. Wilson. She was then tired and had a bad cold. No sugar was found in the urine, and insulin had been omitted. Insulin was given again. The next day she became drowsy and had pains in her back. Sugar and acetone bodies appeared in the urine. On the following morning there was more drowsiness and some exophthalmos, and in the afternoon the patient became comatose and the breathing deep. Insulin continued to be given, but no urine could be obtained. A lumbar puncture was performed. Some improvement resulted which continued for some days, although there was some vomiting. A specimen of urine was obtained by catheter at the time of the lumbar puncture. The patient died a few weeks later, but no details were obtainable. (Table VIII.)

TABLE VIII. (Case 8.)

| — | Vol. | Sugar. | Acetone bodies. | Urea. | — |
|---|---|---|---|---|---|
| Blood .. | — | 0·46 | — | — | — |
| Urine .. | ? | Nil | Nil | — | — |
| C.S.F. .. | 14 c.cm. removed. | — | $FeCl_3$ + Legal + + | 0·15 % | Cells 0. Protein 0·05 % |

*Notes.*—The striking points in this case were: (1) The high blood-sugar with no sugar in the urine. (2) Acetone bodies present in the C.S.F., but absent in the urine. (3) The high urea content of the C.S.F. (4) The pronounced oliguria.

CASE 9.—O. B., aged 19, female. Seen by one of us in consultation with Dr. H. P. Warner, of Woodford Green. Two years' history of malaise. Thirst was noticed two weeks previously, and four days previously the urine was found to contain 7 per cent. sugar, when the diagnosis of diabetes was made. She became drowsy early in the day, and by the evening was in coma. No urine was passed during the day. Sixteen months later she required 42 units of insulin a day, and with this the blood-sugar was 0·17 per cent., and the urine nearly always sugar-free. (Table IX.)

TABLE IX. (Case 9.)

| Date in Dec., 1923. | Blood. | | Urine. | | | | Treatment. | |
|---|---|---|---|---|---|---|---|---|
| | Sugar %. | Urea %. | Vol. oz. | Sugar | Acetone bodies. | Albumin. | Insulin. | Fluids. |
| 14th | 0·45 | 0·077 | 13 (cath.) | 1% | + + + | + | 50 units at once, 30 units 4-hrly. | See below. |
| 15th | — | — | 60 | — | — | — | | |
| 16th | — | — | 70 | — | — | — | — | |
| 17th | — | — | 65 | — | — | Nil | — | |

*Fluids.*—14th and 15th, 40 oz. saline with glucose and $NaHCO_3$, by nasal tube every hour.

*Notes.*—This case shows the preliminary oliguria with albumin in the urine and a raised blood-urea. With the onset of diuresis the albumin disappeared.

CASE 10.—K. A., aged 20, male. History of diabetes for two years. He was living at home on a protein-fat-vegetable diet, and was having 45 units of insulin a day. On this he was keeping very well, and was able to do all the work he wished to. On Wednesday, July 16th, 1924, he caught a chill and went to bed. He was still in bed on Friday, and he started to vomit. Insulin had been given as usual up to Friday morning, when it was omitted. On Friday night 30 units of insulin were given with some sugar, as he was drowsy. He died early Saturday morning. No other details were obtainable.

CASE 11.—J. W., aged 11, female. This child had had diabetes for about two years, and had done very well with insulin treatment at home. Her dose was 8 units in the morning and 16 units at night. On Thursday, July 31st, 1924, she had a temperature and was put to bed. Insulin was given as usual. On Friday she had a fluid diet and only 4 units of insulin. On Saturday the temperature became normal, but vomiting commenced and there was some air-hunger. The diet was still restricted to fluids and insulin was omitted. On Sunday some morphia was administered and the vomiting, which had been very persistent, ceased. At 8 A.M. she received 16 units of insulin, as there was much glycosuria. At midday 20 units of insulin and a rectal injection of glucose and sodii bicarb. were given, followed by 16 units of insulin and rectal glucose four-hourly, bringing the total amount of insulin to 68 units. On Monday she received 32 units of insulin, but became semi-comatose and her pulse began to fail. As she appeared to be in pain morphia was again administered. Death occurred at midday.

*Notes* (Cases 10 and 11).—There is a certain similarity in these two cases. In both a febrile attack was followed by vomiting, coma and death, and in both the dose of insulin was diminished. In both cases, when ultimately the seriousness of the condition became evident, the correct treatment of insulin and sugar was started, but in neither case were the quantities of insulin and fluids given as great as were found necessary in the cases treated in hospital.

## *Discussion.*

*Length of History.*—Cases 1, 4, and 5 show the remarkable acuteness of onset of which diabetes is capable, the illness apparently dating back only seven days in Case 5.

*Age.*—In our series 9 of the 11 were between 11 and 20 years old, the remaining two being 25 and 28. This, however, is hardly a fair representation of the age-incidence of coma as the literature abounds with cases between 30 and 60, usually terminating a fairly long history of diabetes mellitus.

*Onset.*—The apparent cause of onset in many of our cases was a febrile disturbance such as a sore-throat or a cold. In three cases (3, 10, and 11) who were receiving insulin, coma started within a day of omitting insulin, either on account of a febrile disturbance or operative interference. Vomiting also appears often to precede coma (Cases 2, 6, 10, 11), this symptom occurring fairly frequently in histories of many reported cases.

*Renal Element.*—The renal element in diabetic coma appears to have escaped attention during the last few decades. Recently several investigators have recorded cases in which some renal failure is evident. Warburg [1] in particular has reported four cases and reviewed the literature with reference to diabetic coma as far back as 1844, when Bouchardat recorded two cases of diabetes who died in coma. In both of these before the onset of coma the urine contained much sugar, but during the 24 hours preceding death the urine contained no sugar. Between that date and 1897 there are many cases recorded in which diabetics died in coma with either anuria, or oliguria, or albuminuria with or without casts. The first record of definite urea retention in a case of diabetic coma was in 1868, when Colin notes that the blood from the veins at post-mortem contained a definite excess of urea. More recently Rosenblom,[2] Joslin,[3] Höst,[4] Rahlff,[5] Paddock [6] have recorded cases of coma in which the urine, while containing sugar, failed to show any ketone bodies; albuminuria was present in almost all cases. Mördre [7] has recorded a case in which the urine showed the presence of sugar and albumin with absence of ketone bodies, and in which the blood-urea was much raised, and Imrie and Skinner [10] record a similar case with anuria and a raised blood-urea.

These cases, except Warburg's and Imrie's and Skinner's, were treated before the days of insulin, and they all died, with the exception of Rahlff's case and two of Warburg's. The latter two cases showed some oliguria, albuminuria, absence of ketone bodies, and a raised blood-urea. The albuminuria disappeared and the blood-urea returned to normal with recovery. In Warburg's two fatal cases ketone bodies were absent from the urine. Brunton [11] has recorded two cases of diabetic coma successfully treated, in one of which there was a raised blood-urea which returned to normal. He also examined the blood-urea of several other diabetics not in coma and found figures within the normal range. No note as to the urine was made.

In a somewhat different category are the cases recorded by McCay and his co-workers.[12] He found that the Bengali leading a sedentary life and becoming obese was afflicted with a mild type of diabetes which often terminated in coma. He examined a number of cases and found a marked urea and non-protein nitrogen retention. The blood-sugar was raised. The urine showed albuminuria and casts and contained

only small amounts of sugar, while the ketone bodies were present in traces only or were absent.

These cases were uniformly fatal, and McCay regards them as dying of uræmic coma following a prolonged deterioration of the kidney, but he had no opportunity of examining them before they were admitted in the early stages of coma, and apparently no microscopical examination of the kidneys was made. They may well have been, therefore, cases of diabetic coma with terminal renal failure.

An examination of the nine cases observed by us affords further evidence of the part played by the kidney in diabetic coma. In six cases oliguria was certainly present, and in eight cases there was albuminuria. The blood-urea was measured at the time of coma in seven cases, and in six of them it was abnormally high. Three of the cases (2, 7, and 8) observed by us terminated fatally in spite of insulin treatment, and in these the blood-urea ranged from 0·135 to 0·198 per cent. In only one case that recovered was such a high value found. In two of the fatal cases (2 and 8) the severe degree of renal failure was suggested by two further facts: (1) in spite of a very high blood-sugar, sugar was absent from the urine or present in traces only at some time during the coma; (2) the urine contained no acetone bodies.

In all the cases recorded up to date in which the urine showed no ketone bodies their presence in the body fluids has been assumed. In Case 8 this evidence was obtained by examination of the cerebro-spinal fluid. It has been shown also in a previous paper [13] that the kidney in coma does not concentrate ketone bodies as well as it does when coma is not present. (Table II. of the latter paper shows that in Cases 3 and 5 the concentration of ketone bodies in the urine was about ten times that of the blood, while in Case 4 in coma the concentration in the urine was only two or three times that of the blood.)

The cause of the renal failure is by no means clear. It is usually considered that the kidney, in common with other organs, is poisoned by the ketone bodies, and in particular by aceto-acetic acid. While this poisonous action undoubtedly exists it does not explain why a kidney which has for a long time successfully dealt with large quantities of ketone bodies suddenly fails and permits them to accumulate.

Other possibilities must therefore be considered. There are several.

1. The poisonous action exerted by the excess of sugar in the blood. The height of the blood-sugar in coma is indeed striking in some cases. Joslin [3] has recorded a blood-sugar as high as 1·37 per cent. There are records of cases in coma with blood-sugars below 0·4 per cent., and diabetics not in coma are fairly often seen with a higher blood-sugar than this. However a blood-sugar above 0·4 per cent. is undoubtedly very common in coma. In seven of our cases the blood-sugar was estimated at the time of coma. The lowest value was 0·36 per cent., and all the other values were above 0·4 per cent.

2. Other toxins may be formed (suggested by Paddock, Rosenblom, McCaskey). There is, however, very little evidence of them.

3. The ketone bodies may poison the heart muscle and the circulatory failure may cause renal failure with oliguria and further accumulation of poisons. (This cause for oliguria was pointed out by Frederick Taylor in 1880.) That circulatory failure is characteristic of diabetic coma is shown by the feeble pulse and diminished intra-ocular tension that occur so commonly. However, in Case 8 the pulse appeared to one of us perfectly normal, and yet the blood-urea was 0·06 per cent., so that circulatory failure will not explain this matter completely.

4. The preceding polyuria noted in many cases, or the vomiting in others, may completely deplete the water reservoirs of the patient, the kidney thus becoming unable to excrete the poisonous ketone bodies owing to lack of the necessary water. The almost constant marked dehydration of a coma patient adds support to this, and the recovery, if only temporary, which has frequently been noticed to follow the intravenous injection of large volumes of salines also points in the same direction. The diuretic effect of high blood-sugar [19] would also account for the close association between a high blood-sugar and coma.

5. The ketone bodies may be produced so very rapidly that the kidney is unable to cope with them. This is probably what occurs in the cases of coma occurring within the first few weeks of the disease.

The last three factors probably account together or separately for the majority of cases of coma, and also for the different types of case (cf. Dreschfeld [8] and Frerichs,[9] quoted by Warburg, and the report of the Insulin Committee.[11])

*Prognosis.*

All the cases of diabetic coma in this paper were young subjects. With efficient insulin treatment the most important immediate cause of death at the present day would appear to be renal failure, as indicated by prolonged oliguria, high blood-urea, and the excretion of mere traces of sugar or acetone bodies in the urine. Albuminuria is practically always present and so will not influence the prognosis. After recovery from coma there is no tendency to relapse into coma provided insulin treatment is continued. The ultimate severity of the case, as judged by the amount of insulin required, depends largely on the length of time the patient has had diabetes, if insulin has not been given previous to the coma, because the disease is naturally progressive in young subjects.

Our figures so far as they go support this view. The amount of recovery in Cases 1 and 5, where the history was short, is remarkable. Enocksson [14] has recorded an even more striking success in a child who, within three months of recovery from coma, showed a perfectly normal tolerance to carbohydrates. This was unfortunately broken down by carbohydrate overfeeding, but on a suitable diet returned almost to normal again.

*Diagnosis.*

In view of the above results it is obvious that some cases of diabetic coma closely resemble uræmic coma. Take, for example, Case 8, where the urine showed no sugar or ketone bodies and where there was also urea retention. Such a case seen for the first time without a history would undoubtedly be diagnosed as uræmia, and only the estimation of the blood-sugar would indicate the correct diagnosis, and even here care in the interpretation of the result is required, since in chronic nephritis the blood-sugar tends to be slightly high. Further points in favour of uræmia in young subjects would be a blood pressure over 150 mm. and the presence of retinal changes, since diabetic retinitis (even if it exists, which is doubtful, and is not merely secondary to a coincident hyperplastic sclerosis, senile calcification or Monckeberg's sclerosis) is never, in our experience, met with in young subjects. As we are now able to combat diabetic coma by means of insulin with a good chance of success it is important that cases should not be missed, and in all cases of suspected uræmic coma where the history is doubtful blood-sugar estimations should be made.

*Prevention of Diabetic Coma.*

L. Blum has pointed out that patients who have been treated with insulin may pass rapidly into coma if insulin is suddenly stopped. The explanation is that owing to the insulin such patients have put on much weight in the form of fat. But fat is the chief source of ketone bodies, so that the latter are immediately formed in large quantity if the carbohydrate metabolism is suddenly interfered with by omitting insulin. As a contrast the case may be cited of a man, aged 54, seen by one of us in consultation with Dr. Bent before the insulin days. As the result of a four years' history of diabetes, he had been reduced to a mere skeleton. The urine gave a very faint Rothera reaction four days before his death, which was not from coma, but rather from inanition. The ketosis was presumably absent because the body fat had practically disappeared. The elderly patient

with diabetes is not in danger of diabetic coma, and such people are able to take a course of insulin treatment and obtain the full benefit from it, and they may then omit insulin when they like.

The risk that acute infection may precipitate coma has long been known. Out of ten of our cases where the notes are complete, a history of acute infection immediately preceding the coma was obtained in no less than seven, and this took the form of "sore-throat," "cold," "chill," or "temperature." It is thus obviously of great importance to protect patients with diabetes from acute catarrhal infections of the respiratory mucous membranes by means of face masks made of butter muslin, by Glegg's paraffin and vaseline treatment,[15] by prophylactic vaccination, &c. If infection occurs the insulin must be continued, and if glycosuria and ketosis supervene the dose should be increased and extra carbohydrates should be given for the time being. The bowels should be kept open and plenty of fluid should be taken by the mouth.

*The Treatment of Diabetic Coma.*

Our general views on the treatment of diabetic coma have already been given by one of us,[16] so that a brief summary is all that is necessary at present. Massive doses of insulin (20–40 units) are given every four hours, and at the beginning an intravenous injection of 10–20 units may be given if the case is urgent. The frequency of urea retention makes it important to give large volumes of fluid, so as to keep up the flow of urine. It is hardly ever necessary to give an intravenous injection of fluid because the latter can be absorbed rapidly and in larger quantity from the alimentary canal. If the patient cannot take one pint of fluid every hour by mouth, it should be passed directly into the stomach or duodenum through a nasal or Einhorn's tube, with the patient lying on the right side. The fluid should be isotonic, sugar, sodium bicarbonate, and a little salt being dissolved in tap water. A more accurate prescription is as follows: Dextrose 3 per cent., sodii bicarb. 0·5 per cent., potassium chloride 0·05 per cent., calcium chloride 0·03 per cent.

A look out must be kept on the bases of the lungs to see that œdema does not develop. The rapidity with which energetic treatment with insulin may cause diabetic coma to pass into hypoglycæmic coma without the patient recovering consciousness in between has been pointed out by Graham [17] and by one of us,[16] and is illustrated by Case 3 of the present paper. In the absence of blood-sugar examinations at frequent intervals, the plan of testing the urine at two-hourly intervals has been advocated, so that the administration of insulin may be temporarily stopped as soon as the urine is sugar free and only continued again when sugar returns. Such a plan would have failed in two of our cases, because the urine did not contain sugar even though the blood-sugar was high. It would be better to take account also of the ketone bodies of the urine by means of Rothera's and the $FeCl_3$ tests, because in hypoglycæmia both sugar and ketone bodies disappear from the urine; but even this plan would not have answered in our two fatal cases. Undoubtedly the safest plan is to continue giving sugar by mouth at frequent intervals until an abundant flow of urine is definitely established, and when this is the case sugar and ketone bodies will no longer be retained by the kidneys, and the urine will give a true index of the amount of hyperglycæmia and ketones in the body. The fluid intake may then be diminished and the sugar omitted, and the insulin should then be continued until the urine is sugar-free and free from ketones when tested at two-hourly intervals. Our subsequent treatment has been fully described elsewhere.[16]

Finally, we should like to thank the physicians at Guy's Hospital for facilities for examining their cases, and in particular we should like to thank Dr. J. H. Ryffel for permission to quote some of the analyses carried out by him. Part of the expenses of this investigation were defrayed out of a grant to one of us from the Medical Research Council.

*Summary.*

1. Eleven cases of diabetic coma have been reported and certain cases reviewed from current literature. 2. A definite renal element as shown by oliguria, albuminuria, and urea retention and failure to excrete ketone bodies, and occasionally sugar, is present. 3. In some cases this renal failure is so decided as to cause a marked resemblance to uræmic coma. 4. The cause of the renal failure has been discussed. 5. The treatment is carried out by means of large injections of insulin, and by the administration of much fluid, containing dextrose, by the mouth.

*Note.*—Since sending in this paper for publication, an interesting article by Dr. A. Clarke Begg has reopened the question (THE LANCET, July 11th, 1925, p. 69). In view of the present observations we would urge with Dr. C. G. Imrie (ibid., 251) that it is better not to divide up cases of diabetic coma into two distinct groups, since renal insufficiency in varying degree was present in practically all our nine consecutive cases. Further, we suggest that his cases, like our Case 8, were really acetonæmic, but that the kidneys fail to excrete the ketone bodies, and that the most rapid means of introducing fluid, which is urgently required by the body, is through the alimentary canal by nasal tube.

*Bibliography.*

1. Warburg, E.: Acta Med. Scand., 1925, lxi., 301–334.
2. Rosenblum, J.: New York Med. Jour., 1925, cii., 294–296.
3. Joslin, E. P.: The Treatment of Diabetes Mellitus, 2nd ed., 1917, New York.
4. Höst, H. F.: Norsk Mag. and Laeger, 1920, lxxxi., 1162–1170.
5. Rahlff, A.: Jysk Medicius Selskabs Forhandleyn, 1924, lxvii., p. 111.
6. Paddock (1924): Quoted from Warburg. No reference given.
7. Mördre, S. K.: Norsk Mag. and Laeger, 1921, lxxxii., 785–788.
8. Dreschfeld, J.: Bradshaw Lecture, Brit. Med. Jour., 1886, ii., 358–363.
9. Frerichs: Ueber den Diabetes, Berlin, 1884. (References 2–9 have been quoted from Warburg.)
10. Imrie, C. G., and Skinner, E. F.: THE LANCET, 1924, i., 14.
11. Brunton, C. E.: Brit. Med. Jour., 1924, ii., 665.
12. McCay and others: Indian Jour. Med. Research, 1919–20, vii., 22–80.
13. Burgess, N., Campbell, J. M. H., Osman, A. A., Payne, W. W., and Poulton, E. P.: THE LANCET, 1923, ii., 777.
14. Enocksson, B.: Acta Med. Scand., 1925, lxi., 335.
15. Poulton, E. P.: THE LANCET, 1923, ii., 29.
16. Poulton, E. P.: Brit. Med. Jour., 1924, i., 261.
17. Graham, G.: THE LANCET, 1924, i., 63.
18. Lewis, T., Ryffel, J. H., Wolf, C. G., Cotton, T., and Barcroft, J.: Heart, 1913, v., 45.
19. Woodyatt, H. T., Sansum, W. D., Wilder, R. M.: Jour. A.M.A., 1915, lxv., 2067.

# THE TRANSMISSIBLE BACTERIAL LYSIN AND ITS ACTION ON DEAD BACTERIA.

BY FREDERICK W. TWORT.

*(From the Laboratories of the Brown Institution, University of London.)*

SINCE my first publication in THE LANCET in 1915 on the transmissible lysin to be found in association with micrococci and with bacteria of the dysentery-typhoid-coli group, a large number of papers have been published by different workers, and the literature on the subject at the present time is extensive. It is, however, not my purpose in this paper to do more than record a few additional experiments which I have carried out during the past six months.

No agreement has yet been reached as to the nature of the lytic agent, but, in the controversy that has centred round this important point, the absence of any definite action by this substance on dead bacteria has been used both in support of and against the view that it is an ultra-microscopic virus. It is therefore of interest to record that from my recent experiments it appears certain that dead bacteria, under special circumstances, are attacked and lysed.

A new strain of the lysable white micrococcus and fresh active lysin were obtained from vaccinia. The micrococcus was isolated free from lysin, and grown on agar slopes for 24 hours; from these a moderately turbid emulsion was made with normal saline. The emulsion was heated in a water-bath at 60° C. for one hour, then mixed with an equal quantity of ordinary sterile peptone-beef broth, and 2 c.cm. of the mixture pipetted into each of four sterile test-tubes.

Tube 1 received no addition.
Tube 2 was inoculated with a loopful of pure living micrococcus.
Tube 3 was inoculated with 2 drops of filtered lysin.
Tube 4 was inoculated with 2 drops of filtered lysin and a loopful of the living micrococcus.

*The Standard Experiment.*

This experiment throughout the paper will be referred to as the standard experiment. The four tubes were incubated at 37° C. After 24 hours tubes 1 and 3 showed no visible change. Tube 2 showed an increase of turbidity, while tube 4 showed a marked clearing of the emulsion. The experiment has been repeated a number of times with a similar result, although the time taken for tube 4 to clear may vary from one to three days according to the activity of the lysin used. It is worthy of note that a good result is also obtained if the coccus emulsion is prepared from cultures which are a week or more old, and with an emulsion heated at 75°–100° C., or when it is autoclaved at 120° C. for five minutes. Tube 4 in the experiment never seems to clear completely, but the opacity left is certainly in part due to the survival of some of the living bacteria, as can be proved by plating out the emulsion. The result is best shown when the dead coccus emulsion is not too thick, otherwise there will be insufficient fresh lytic agent produced to act on the maximum proportion of cocci in the emulsion. It is not essential to add broth to the saline emulsion of cocci, but without this the action is usually slower.

The experiments show clearly that there is lysis of dead bacteria when the lytic agent is being freshly produced in the presence of living bacteria of the same variety. In other words, that the lysin will act on both dead and living bacteria, but is only produced—*or possibly activated*—in the presence of the living. If the lytic agent is so activated or complemented by some thermolabile substance present in the living bacteria, it is a little surprising that the lysin, in the absence of living bacteria, does not act on the dead emulsion, seeing that the lytic agent in the experiments is mixed with broken-down products of living bacteria. It may, however, be that such a complementary agent, if present, is used up as fast as it is formed, and is therefore not free in sufficient quantity to produce any visible action. We know, from hæmolytic and many similar experiments, that such reactions are rarely simple in nature, and it seems probable from the experiments described here that the lytic agent consists of at least two portions, whatever the nature of these portions may be.

It may be recalled that d'Herelle in his work on the transmissible lysin—"bacteriophage"—claims to have separated a non-transmissible lysin from a transmissible virus, and if future experiments should prove the ultra-microscopic virus theory to be the correct one, then the experiments I have described might indicate that whereas the virus will grow only on the living bacteria, the lysin secreted by the virus will act on both the living and the dead, although the living may be first killed by the virus.

*The Question of a Complementary Agent.*

Some experiments were now carried out to test for the presence of a complementary agent that might be contained in living bacteria. The lysable micrococcus—free from the lytic agent—used in the standard experiment was grown in ordinary peptone-beef broth for three days at 37° C., and the culture then passed through a Doulton brown filter. The sterile filtrate was mixed with an equal quantity of fresh sterile broth, care being taken to avoid contaminations. This mixture was added to the emulsion of dead micrococci in place of ordinary broth which was used in the standard experiment, and the whole distributed into four test-tubes. Tube 1 was heated to 65° C. for an hour, and the tubes then inoculated as in the standard experiment—that is, tube 1 received no addition, tube 2 was inoculated with a loopful of living micrococcus, tube 3 received two drops of lysin, while tube 4 was inoculated with a loopful of coccus in addition to two drops of lysin. The experiment was repeated with slight variations. In some cases a much larger quantity of the filtered lysin was added, and in other instances, where an older broth culture was used, the filtrate of this was mixed with twice or three times its volume of fresh sterile broth before being mixed in equal quantity with the dead bacterial emulsion. In none of the experiments, however, was there any evidence of lysis in tube 3, the emulsion remaining as opalescent as in tube 1. Tube 4 in these experiments showed the same lysis of the emulsion as was observed in the standard experiment. It is clear from the absence of any lysis in tube 3, that the living micrococcus cannot be replaced by filtrates of the coccus growth. The experiments described, however, are not sufficient to prove that no complementary agent exists in the bacterial protoplasm, and it is intended to carry out further experiments to probe this question thoroughly.

In some other experiments a small quantity of fresh serum from a guinea-pig was added to the tubes which in other respects were set up in the manner of the standard experiment. This, however, did not activate the lysin in the absence of the living coccus. Tube 3 remained as opalescent as tube 1, while lysis took place only in tube 4.

*Comparative Tests.*

In carrying out these experiments comparative tests were usually made with emulsions of other bacteria which were killed at 60° C. and used in place of the lysable micrococcus. The bacteria included a slow-growing micrococcus also obtained from vaccinia, and giving a dense white heaped-up growth, the Shiga type of dysentery bacillus and *Bacillus phlei*. In each case four tubes were put up, and these were inoculated as in the standard experiment, and incubated as before. All the results were negative, there being no lysis of any of the emulsions, indicating that the lysin, in the presence of living cocci, is as specific in its action on dead bacteria as it is when they are living. This result is of particular interest in connexion with experiments that have been carried out by many workers who *appear* to have acclimatised a lysin for one bacterium to act upon another. If, however, the lytic agent is not of the nature of a virus, it would appear more likely in the acclimatisation experiments that a new variety of lysin, or possibly the specific portion of a double body, has been produced from the second bacterium, or the lytic agent may have always been present with the second bacterium, and been stimulated to start its cycle of activity. In any case it seems clear that the lysins associated with different bacteria cannot be identical, for while resistance of the bacterium may play a part in preventing any action in the case of the living bacterium, this cannot be so with emulsions heated as high as 120° C.

*The Temperature at which Lysin is Destroyed.*

In my original paper on the transmissible lysin, associated with the micrococcus to be obtained from vaccinia, it was stated that the lysin appeared to be destroyed at 60° C. Many workers have since given a higher temperature, while some have stated that there is not complete destruction at 65° C. In view of the different results obtained, I have recently carried out a large number of experiments to re-test this point. My original tests were carried out in the following manner: Agar streaks of the micrococcus showing well-marked lysis were taken and the growth washed off with 0·85 per cent. NaCl. This was made up to 200 c.cm. with a further quantity of saline and passed through a Doulton white filter. The filtrate

was then run into long capillary tubes, and these placed, completely immersed, in a water-bath regulated at the temperature to be tested. On repeating the experiment in this way I have found that the lysin is usually destroyed at 60° C. in one hour. If, on the other hand, the filtrate is placed in a sterile test-tube plugged with cotton-wool, there is nearly always a small amount of lysin left undestroyed. Such a method, however, cannot be relied upon to give accurate results. It has been found also that if the lysed cocci are mixed with the condensation water of the agar tube, and the concentrated lysin drawn into capillary tubes, and heated to 60° C. for an hour, the lysin is probably never destroyed completely. Various other circumstances, which for lack of space cannot be considered in this paper, appear to affect to a small extent the temperature at which the lysin is completely destroyed. It is also possible that the lysins associated with different bacteria are not all destroyed at exactly the same temperature.

There is one additional point of some interest that has been observed when carrying out these experiments. When a diluted lysin, which has been almost completely destroyed, is pipetted down a number of agar slopes which are then streaked down with the coccus and incubated at 37° C., the growth obtained is often a continuous white streak entirely free from clear areas. When subcultures are made from the primary growths on to fresh tubes of agar, these may also give a good white growth; but in the third or fourth subcultures, and sometimes in the second, a few clear areas may appear, and from these the active lysin can again be obtained. Moreover, the clear areas appear much more frequently in the third and fourth subcultures than is the case with similar areas arising "spontaneously" in a pure stock culture of the micrococcus. This seems to show that a growth of micrococcus, apparently free from lysin, may contain the lytic agent, although its action be masked or held in suspense. Most workers have considered this as one of the possible explanations of the lysed areas which occasionally appear to arise spontaneously in stock cultures supposed to be free from the lytic agent. It may be noted that d'Herelle has always put forward this suggestion when the spontaneous appearance of the lysin has been used as an argument against the virus theory. The experiments certainly indicate that it may in some instances be the correct explanation, although it is not necessarily the correct one in all cases.

*Conclusion.*

In my past papers I have discussed in considerable detail the possible nature of the ultra-microscopic viruses, and the possible relation of the transmissible lysin to these viruses. It will therefore be sufficient for me to observe in concluding this paper that there appears to be no definite proof that the transmissible lysin is a virus, although there are many arguments that may be used in support of this view. On the other hand, there are also many that may be used against it. It is probable that the question will remain unsettled until we know for certain the nature of these viruses. The experiments described in this paper appear to offer scope for further investigations along similar lines, and these in the future may throw some additional light on the problem.

HOSPITAL AIDS.—During the past year nearly £3000 was distributed to London hospitals and other philanthropic institutions by the Lion Hospital Aid Society. This little known organisation was formed in 1898 by the employees of Messrs. Lion, Lion, and Son, an East End firm of boot manufacturers. Its income in the first year was £70; it now exceeds £6000. The money is raised by collecting boxes, entertainments, and social gatherings.—The object of the Samaritan Fund of St. Bartholomew's Hospital, which has just reported upon its last year's work, is to assist patients after their discharge. The fund, which was formed in 1833, through the benevolence of Mr. Alexander Bennett, has aided 74,000 patients at a cost of £56,000, of which a little more than £1000 was spent last year. The help takes the form of money grants, railway fares, instruments, appliances, and convalescent treatment.

# CANCER AND ACQUIRED RESISTANCE TO TUBERCLE.

BY THOMAS CHERRY, M.D., M.S.,
MELBOURNE.

A SUGGESTIVE feature in recent reports on public health from many parts of the world is the steady decline in the number of deaths from tubercle and the equally steady advance of cancer. In the first English records, more than 80 years ago, this reciprocal movement was already apparent, but at that time cancer was quite unimportant as compared with phthisis. By 1855 the phthisis-rate had fallen to 2600 per million, and the cancer-rate had advanced to 320. The two rates are now about equal in England and Wales. The changes which have taken place in the past 30 years and the percentage reduction and increase in the respective rates in each five-year period are as shown in Table I.[1]

TABLE I.—*Mortality Rates Per Million Living.*

| Periods. | Phthisis. | Percentage reduction. | Cancer. | Percentage increase. |
|---|---|---|---|---|
| 1871–5 .. .. | 2217 | — | 445 | — |
| 1876–80 .. .. | 2038 | 8·2 | 494 | 11·0 |
| 1881–5 .. .. | 1830 | 10·1 | 548 | 11·0 |
| 1886–90 .. .. | 1635 | 10·6 | 632 | 15·3 |
| 1891–5 .. .. | 1461 | 10·6 | 712 | 12·6 |
| 1896–1900 .. .. | 1323 | 9·4 | 800 | 12·3 |
| 1901–5 .. .. | 1218 | 8·0 | 867 | 8·4 |
| 1906–10 .. .. | 1106 | 8·4 | 939 | 8·3 |

The fact that the one disease appears to a large extent to be taking the place of the other may be a chance coincidence, and these figures cannot be applied to the problem without further analysis. Not only do the two diseases affect different periods of life, but in England the history of the rise of cancer and the decline of phthisis is different in the two sexes. While it is possible that occupation may have as great influence in the one case as in the other, this is at the present time little more than a surmise.

Perhaps the most important material bearing upon this question is the Supplementary Reports of the Registrar-General for the years 1891, 1901, and 1911. These contain an analysis of the deaths of all males over the age of 15 which were registered in the three consecutive years of each census period. Each report contains about half a million deaths classified by occupation, age, and causes of death. Table V. (Report, 1911, p. xxii.) gives the "Comparative Mortality Figures," or, in other words, the relative expectation of life, for most occupations. After deducting deaths by accident I selected occupations with approximately 200,000 deaths, half those with the best and half with the worst expectation of life. These may be arranged as under:—

| | "Best" lives. | "Worst" lives. |
|---|---|---|
| Total deaths over 15 years .. | 98,413 | 100,011 |
| Total deaths from cancer .. | 9,745 (9·90 %) | 9,366 (9·35 %) |
| Cancer under 65 years .. .. | 5,011 | 5,897 |
| Deaths at 65 and over .. .. | 52,366 | 35,323 |
| Cancer at 65 and over .. .. | 4,734 (9·23 %) | 3,469 (9·86 %) |

When the cancer-rate is expressed as a percentage on the total number of deaths in each case it falls somewhat more heavily on the "best" lives. But cancer attains its greatest frequency about the age of 65, and a much larger proportion of the "best" lives reaches that age. If we express the rate for the age-period 65 as the percentage on all the deaths after 65 the rate is lower for the "worst" lives. Throughout this investigation the cancer-rate is calculated for any given age-period as a percentage on all the deaths from the beginning of that age-period to the end of life. In this way results are obtained as shown in Table II.

The large number of deaths from cancer in men following occupations corresponding to those represented by these "best" lives has probably created an

[1] Table VI., Statistical Review, 1921, p. 35.

TABLE II.—*Age-Incidence of Cancer on 200,000 Deaths (1911).*

| Age-periods .. .. | 25– | 35– | 45– | 55– | 65– to end. |
|---|---|---|---|---|---|
| "Best" lives .. | 0·18 | 0·60 | 1·8 | 3·9 | 9·0 |
| "Worst" lives .. | 0·21 | 0·81 | 2·7 | 5·2 | 9·8 |

impression that cancer selects those in easy circumstances and passes by the poorer and the working-classes. But Table II., comprising nearly half the deaths of men in England during three years, proves that this is not the case. Cancer selects the survivors of the occupations which have involved a hard struggle for existence. The worst lives are more heavily hit at every age-period.

In order to test whether these results applied generally, I turned to Social Class 1 of this report (p. 3). This is described as "Upper and Middle Classes," and comprises, after deducting accidents, 45,557 deaths over the age of 25. Of these 45·3 per cent. were over the age of 65. Corresponding figures from the coal-miners are 20,992 deaths, of which 38·8 per cent. were over the age of 65. The expectation of life was therefore much better in Social Class 1, but on analysing the two groups of deaths (Table III.) the results are quite the opposite from those of Table I.

TABLE III.—*Cancer-Incidence by Age: Coal-Miners and Social Class 1 (1911).*

| Age-periods .. .. | 25– | 35– | 45– | 55– | 65– to end. |
|---|---|---|---|---|---|
| Coal-miners .. .. | 0·26 | 0·92 | 2·6 | 4·4 | 6·6 |
| Social Class 1.. .. | 0·23 | 0·75 | 2·6 | 5·0 | 11·1 |

Thus in the last two age-periods, which are all-important in regard to cancer, the coal-miners were much better off than the upper and middle classes, whereas from Table I. we should have expected the opposite to be the case. Amongst the differences in the causes of death in these two classes of men is the fact that Social Class 1 has about 15 per cent. more deaths from phthisis than the miners at all ages, and that when the two age-periods 25–35 and 35–45 are taken as the basis of comparison this excess amounts to more than 25 per cent. I found that the percentage of phthisis on these two age-periods formed the best available index for the incidence of this disease at all age-periods, and on this basis 58,000 deaths were compiled from occupations in which the index was less than 3·10 and more than 8·50 respectively. Deaths by accident, all deaths under 25, and occupations in which the total deaths were less than 1000 were omitted from the lists (Table IV.).

TABLE IV.—*Age-Incidence of Cancer in Relation to Phthisis (1911).*

| Age-periods .. .. | 25– | 35– | 45– | 55– | 65– to end. |
|---|---|---|---|---|---|
| 58,866 lowest phthisis | 0·11 | 0·42 | 1·38 | 3·47 | 9·23 |
| 56,716 highest phthisis | 0·30 | 1·00 | 3·25 | 5·60 | 9·86 |

It will be seen that in all the age-periods except the last the incidence in the low phthisis group is only about half of that in the high phthisis group. But in contrast to this striking co-relation of the two diseases we find that amongst the occupations included in both lists there were some, such as solicitors and barristers, which had a low phthisis and high cancer-rate, and conversely tool-makers and others which had high phthisis-rates associated with low cancer. On attempting to chart the occupations on the basis of cancer and phthisis for 1891 the results were not satisfactory.

It then struck me that we were comparing unlike things, that resistance to tubercle is probably established or lost fairly early in adult life, and therefore the proper method was to compare the incidence of cancer with the incidence of tubercle in the same occupation 25 or 30 years earlier. Unfortunately the details in the earlier census reports do not include the ages as well as the causes of death, and that for 1891 is the earliest available material.

From the report for 1891 I arranged according to their phthisis index the occupation that could be traced forward to 1911. This index was taken from the two age-periods 25–35 and 35–45. The cancer index is the sum of the four cancer percentages from 25–35 to 55–65. As before, occupations with less than 1000 deaths, deaths under 25, and accidents were omitted. The number of deaths available for analysis is about 320,000. The drift of the two diseases may be seen from the following groups of occupations (Table V.).

TABLE V.—*Groups of Occupations.*

| Group. | Number of deaths. | Phthisis, 1891. | Index, 1911. | Cancer, 1891. | Index, 1911. |
|---|---|---|---|---|---|
| A | 45,712 | 3·87 | 2·37 | 3·66 | 5·01 |
| B | 52,835 | 6·47 | 4·59 | 4·82 | 7·17 |
| C | 66,676 | 9·83 | 7·01 | 4·51 | 8·12 |
| D | 74,736 | 12·68 | 7·92 | 6·18 | 9·92 |
| E | 26,018 | 19·20 | 12·13 | 6·76 | 12·95 |
| Total .. | 265,977 | | | | |

These groups comprise the following occupations:—

*Group A.*—1. Farmers. 2. Clergy. 3. Farm workmen. 4. Wheelwrights. 5. Coal merchants and retailers. 6. Sawyers.

*Group B.*—7. Brickmakers. 8. Gardeners. 9. Coal-miners. 10. Railway platelayers. 11. Fishermen. 12. Blacksmiths. 13. Greengrocers. 14. Inn-keepers. 15. Bargemen.

*Group C.*—16. Labourers (other than farm labourers).

*Group D.*—17. Railway officers and clerks. 18. Railway drivers and stokers. 19. Railway porters, guards, and signalmen. 20. Coach and bus drivers and grooms. 21. Draymen and carters. 22. Watchmen and messengers. 23. Engineers and boilermakers. 24. Iron manufacturers. 25. Painters and plumbers. 26. Printers. 27. Dyers. 28. Butchers. 29. Gas workers.

*Group E.*—30. Hotel employees. 31. Musicians and theatre employees. 32. Commercial travellers. 33. Commercial clerks. 34. Wharf labourers. 35. Coal-heavers. 36. Brass workers. 37. Paperhangers. 38. Brewers.

The incidence of cancer by age-periods in these groups is set out in Table VI. For convenience of comparison the results for 1911 are printed in italic type.

TABLE VI.—*Age-Incidence of Cancer, 1891 and 1911.*

| Age-periods .. | 25– | 35– | 45– | 55– | 65 to end. |
|---|---|---|---|---|---|
| Group A { 1891 | 0·09 | 0·37 | 0·90 | 2·3 | 4·9 |
| { *1911* | *0·11* | *0·40* | *1·21* | *3·29* | *8·99* |
| Group B { 1891 | 0·13 | 0·48 | 1·37 | 2·84 | 4·77 |
| { *1911* | *0·19* | *0·69* | *2·13* | *4·16* | *8·32* |
| Group C { 1891 | 0·14 | 0·44 | 1·42 | 2·51 | 4·21 |
| { *1911* | *0·17* | *0·71* | *2·36* | *4·88* | *8·85* |
| Group D { 1891 | 0·20 | 0·69 | 1·88 | 3·41 | 4·86 |
| { *1911* | *0·27* | *0·89* | *3·00* | *5·76* | *10·00* |
| Group E { 1891 | 0·23 | 0·66 | 2·02 | 3·8 | 5·4 |
| { *1911* | *0·29* | *1·10* | *3·9* | *7·3* | *11·2* |

### *Relationship of Decline and Increase Between Cancer and Phthisis.*

From this analysis of more than 82 per cent. of the deaths available for this investigation the following results appear:—

1. When the groups are arranged on the basis of the phthisis percentage in 1891 the incidence of cancer in 1911 formed nearly a complete sequence for every age-period.

2. With few exceptions the occupations with both high phthisis and high cancer in 1891 increased at a much faster rate between these dates than those with the lowest phthisis and cancer-rates in 1891.

3. The incidence of cancer at all age-periods in 1911 was always light or heavy in accordance with the phthisis incidence on the same group.

4. During these 20 years there was no instance of an occupation which showed reduction in phthisis without showing increase in cancer.

This series of co-relations may be due to chance, for as the one disease is declining and the other increasing it is possible, though not very probable, that every occupation should be normal in both respects. If there is a causal relationship the cause must come out of phthisis and act upon cancer, for the one occurs early and the other late in life. The probability of cause and effect grows with each successive step, as we establish the following propositions:—

(*a*) A similar relationship of decline and increase cannot be demonstrated between cancer and any other disease or group of diseases.

(*b*) The co-relation of phthisis and cancer is found not only in the groups but in each of the 38 occupations which constitute the groups. Most of the occupations with less than 1000 deaths also fall in line. The few exceptions to this rule will be noticed subsequently.

(*c*) There is a recognisable element of proportion in the co-relation.

In a broad way we can say "a large increase in cancer means a large reduction in phthisis; little phthisis in 1891 and little cancer in 1911." I have not yet been able to define this element of proportion, but the following examples are sufficient to arrest attention. The course of the two diseases can be compared in a number of allied occupations. In such a group many variable factors are greatly simplified, such as the type of man, the question of inherited tendencies, the conditions of life and food-supply, and of wages. Such factors are more involved when we compare coal-miners with another social class than when we compare miners in Lancashire with those in Yorkshire (Table VII.).

TABLE VII.—*Phthisis and Cancer in Allied Occupations.*

| | | Phthisis index, 1891. | Cancer index, 1911. |
|---|---|---|---|
| Textile manufactures | Silk | 37 | 41 |
| | Hosiery | 77 | 62 |
| | Wool | 88 | 71 |
| | Cotton | 113 | 73 |
| | Dyers | 110 | 98 |
| Iron trades | Blacksmiths | 72 | 74 |
| | Ship-builders | 88 | 77 |
| | Iron manufactures | 96 | 91 |
| | Wagon works | 99 | 95 |
| | Brass works | 176 | 115 |
| Building trades | Sawyer | 46 | 66 |
| | Carpenters | 90 | 78 |
| | Bricklayers | 110 | 98 |
| | Plasterers and paperhangers | 113 | 119 |
| | Slater, tiler | 135 | 134 |

| | | Phthisis index, 1891. | Cancer index, 1911, all ages. |
|---|---|---|---|
| Coal-miners | Staffordshire | 44 | 133 |
| | Lancashire | 65 | 135 |
| | Wales | 69 | 142 |
| | Durham, Northumberland | 72 | 150 |
| | Derby and Notts | 74 | 153 |
| | Yorkshire | 85 | 158 |

(*d*) The same element of proportion is seen if a graph be prepared in which cancer in 1911 is plotted against phthisis in 1891. 95 per cent. of all the deaths are included in the occupations which fall within the area bounded by the lines which diverge at an angle of 12 degrees. It is possible that this angle would be less if the phthisis index could be built up from percentages of age-periods earlier than 25–35. The probability of chance becomes less as the angle becomes less. When the same occupations are plotted against phthisis in 1911 the angle is 25 degrees.

(*e*) By means of the percentage of cancer on the three youngest age-periods it is possible to foretell what the incidence will be in later life. The same factor decides the incidence in all the age-periods from 25 onwards. This rule is, I think, invariable and if established it almost precludes the possibility of chance. Take, for instance, the actual number of deaths from cancer in two occupations about equal in size in 1911—gardeners and clerks (commercial, law, bank, and insurance) (Table VIII.).

(*f*) A time element is found in the coördination of phthisis and cancer. An inspection of the graph shows that in 1891 all the occupations were nearer to the cancer base line than in 1911. If we could make a similar graph for earlier periods the dots would be still nearer this base line. In 1861 the cancer-rate in men was 220, as against 900 in 1911, and hence the factor which has determined the present rate of increase has apparently been in operation for about 65 years.

TABLE VIII.—*Deaths from Cancer in Gardeners and Clerks in 1911.*

| Age-period. | Gardeners. | | Clerks. | |
|---|---|---|---|---|
| | Quota. | Deaths. | Quota. | Deaths. |
| 25– | 9975 | 9 | 10,455 | 44 |
| 35– | 9541 | 45 | 8830 | 102 |
| 45– | 8951 | 162 | 7184 | 271 |
| 55– | 7993 | 324 | 5265 | 353 |
| 65 to end. | 6236 | 639 | 3155 | 363 |

(*g*) In men an increase in the cancer-rate of 17½ per cent. occurred in the five-year period 1881–6. This period was also marked by the first decided reduction in the phthisis-rates for men between the ages of 45 and 65.

When the three census periods are compared it is found that the reduction of phthisis and the increase of cancer has taken place by two methods. Some occupations have changed in both respects at a nearly uniform rate, so that in a graph the three points are joined by a straight line. In others a great reduction in tubercle in the first ten years is followed by a sharp rise in cancer in the second, so that the position for 1901 is the point of an obtuse angle. It is noteworthy that in very few cases is this a right angle, and in only two cases has there been an increase of phthisis between 1901 and 1911, so that the angle becomes less than a right angle. In no case whatever did a reduction in phthisis take place between 1891 and 1901 without an increase in cancer.

In the following group I presume that the reduction in phthisis has been a process which has occupied a longer time than usual. A great reduction in tubercle and a considerable increase in cancer had taken place by 1911, but I anticipate that the sharp rise in cancer will be disclosed by the census of 1921.

*Group F.*—(34,707 deaths.)
Index 1891: Phthisis, 1274; Cancer, 490
„ 1911 „ 780 „ 775

Watchmakers and jewellers, toolmakers and cutlers, cabinet makers, cotton weavers, general storekeepers, booksellers, potters, bakers, teachers, tailors, drapers, private servants.

A small number of occupations, including about 12,000 deaths, have been rejected for a variety of reasons. Of these, the most important is the change of occupation which often occurs in a man's life-time.

In this investigation the deaths in each occupation have been treated as a self-contained unit of the population, which died out completely in the three years of the census period. No attempt has been made to connect them with the living members of the same occupations who filled in census papers. This method has given a high degree of uniformity to the results set out in this paper. For the last age-period, 65, the deaths from any given disease are expressed as a percentage of all the deaths after 65. For the next preceding age-period a quota is found by adding together all the deaths of the last two age-periods. The percentages are thus calculated on all the deaths which occurred after 55, and so on for the earlier age-periods. As an example, we may say from Table VI. that 4·88 per cent. of labourers over the age of 55 died of cancer before they reached the age of 65. The drawback of this method is the fact that in any year in which the mortality was excessive, as, for example, from influenza, all the percentages from cancer are too low, because the total number of deaths is excessive and the deaths from cancer are not perceptibly affected by influenza. On the other hand, the deaths from phthisis are greatly increased by influenza, and this percentage is higher than normal. This objection does not, however, apply to the comparison of occupations with one another at each census period, because they all have been in the same relation to any such disturbing factor. The Registrar-General's reports include deaths from 15 and upwards in each occupation, but the proportion of deaths in the age-period 15–25 is so variable to the total deaths in many of the occupations that I decided to begin with the age of 25. This compelled me to base the index for phthisis on age-periods which are probably too far advanced for the

best results, because there are many indications that the age-period 10–25 is all important in regard to this disease.

I have given the data for phthisis throughout this paper, because other forms of tubercle are not set out in reports earlier than that for 1911; but in any case phthisis covers about four-fifths of the deaths and it is also the most important source of infection, so that it is possible that cancer rises and falls in relation to phthisis rather than to tubercle in general.

*Significance of Cancer After the Age of 65.*

With regard to the significance of cancer after the age of 65 the following points must be weighed. If these deaths are included in an estimate of cancer incidence during the whole life-time they tend to equalise the rate for all occupations. For the occupations with the greatest proportion of deaths after 65 are those which have the lowest incidence of cancer at all the other age-periods. Conversely, the occupations with the lowest proportion of deaths after 65 are those with the highest cancer-rates at all age-periods. The large numbers at the lower rate in the "best" lives more than balance the small numbers at the higher rate in the "worst" lives. In 1911 the cancer-rate for 65+ was about 10 per cent. in most occupations. There is no difficulty in the theory that more than 1 out of every 10 had become resistant to tubercle, even in such occupations as farm labourers. These considerations led me to close the index for cancer at the age of 65.

The foregoing results appear to be conclusive against the theory that cancer is simply one of the degenerations of old age, and that the present increase is due to the higher percentage of people that now reach old age. By the methods I have adopted it is easy to calculate the percentage that reached 65 in relation to the number that entered any given occupation at 25. If the occupations are grouped on this basis it is found that, in most cases, the higher the percentage that reaches 65 the lower is the cancer incidence at all age-periods. Thus, in 1911, 66·8 per cent. of the deaths in Group A were over the age of 65, while this percentage in Group E was 25·4. But the cancer-rate for Group E was higher than that for Group A at every age-period, whereas if cancer depended chiefly on old age the opposite should be the case. Again, if old age was the dominant factor we should expect the cancer-rate to increase steadily up to the end of life, as is seen in the deaths from cerebral hæmorrhage, but this is not the case. (Table IX.)

TABLE IX.—*Percentage of Cancer and Apoplexy in Men.*

| Age-periods .. .. .. | | 55– | 65– | 75 to end. |
|---|---|---|---|---|
| Cancer .. .. | 1911 | 4·7 | 6·7 | 6·1 |
| | 1921 | 6·0 | 8·5 | 7·9 |
| Cerebral hæmorrhage | 1911 | 2·4 | 5·2 | 8·0 |
| | 1921 | 2·2 | 5·3 | 9·5 |

There is perhaps an analogy between the two diseases in this respect. Apoplexy in early life may usually be explained by the presence of a predisposing factor which either raises blood pressure or weakens the wall of the vessel. Apoplexy late in life seems to have been common from the earliest times. Cancer at all ages over 35 has increased so much during the past 40 years that the disease has become a new problem in all civilised countries. This fact alone makes it probable that the old causes which produced a small number of cases in the past are now at work on a type of population that has been specially prepared for the disease.

*Early Prevalence of Tubercle.*

The history of tubercle in England shows that it was very prevalent during the early part of last century. In some localities hardly a family could be found which was not affected with the "strumous disposition." After allowing for some exaggeration in such generalisations there can be little doubt that the high figures of all the early annual reports are fully justified. With the marked improvement in food-supply and the slower amelioration of the other conditions recovery from a definite attack of phthisis would become more common. In some cases a high degree of immunity might be developed without the occurrence of a recognised attack of phthisis. Let us suppose that frequent contact with tubercle bacilli develops powers of resistance in the individual perhaps on lines similar to what is known to be the case in diphtheria and other diseases. If this resistance includes a quickening of the readiness to proliferation of cells in response to a special form of stimulus most of the facts discussed in this paper at once fall into line. The proliferation is seen in the typical epithelioid cells of the miliary tubercle. The development of powers of resistance to tubercle in people who did not succumb to that disease might thus form a predisposing cause of cancer in later life. The greater the percentage of phthisis in any occupation the greater the chance of any given individual either dying of the disease or else developing powers of resistance to it.

If phthisis acts as a predisposing cause of cancer I think it will be possible to a great extent to explain the difference in the history and incidence of cancer in women as compared with men. There are differences in the cancer-rates in different countries which may also be cleared up.

Further light on the relationship of cancer and tubercle may be obtained by reports on the family history of cancer patients. About 15 years ago Williams, of the Cancer Hospital, London, expressed the view that when several members of a family had died of phthisis the survivors were very apt to develop cancer. So far as I know no material exists at present for following up this line of inquiry. Post-mortem reports on cases of cancer should include a careful search for the signs of obsolete tubercle. Here, again, there are a few casual references to the association of the two conditions, but these do not cover a sufficient number of cases to be of much value. The facts I have brought forward may suggest lines along which a clinical test for early cancer may be worked out.

Finally, it should be possible to determine by experiment whether heightened resistance to tubercle has any effect upon the fate of transplanted cancer cells and upon the readiness with which irritation cancers can be produced. Under any circumstances cancer work is a slow and expensive process, but here is at least one definite problem the solution of which should be attempted without delay. The results of this statistical inquiry can be affirmed or refuted by experiment.

# Clinical and Laboratory Notes.

## BAKERS' DERMATITIS.

BY N. HOWARD MUMMERY, M.R.C.S. ENG.,
MEDICAL OFFICER, MESSRS. J. LYONS AND CO., LTD.; MEDICAL DIRECTOR, FEDERATION OF MEDICAL AND ALLIED SERVICES; LIEUT.-COLONEL (LATE R.A.M.C.).

THE intractable and relapsing skin eruptions commonly associated with the baking and confectionery trades have recently attracted considerable notice in both the medical and lay press, and, according to the report of the recent Conference of Operative Bakers and Confectioners published in the *Times* of August 19th last, the general secretary of their Union stated that there were 20 cases of bakers' dermatitis to-day where only one existed a few years ago. This may be true of some factories in Scotland and the north of England, but not, I think, of those in London.

In view, however, of this widespread interest in an industrial problem of much importance to employers and to their workpeople, it is possible that I may be assisting others, also engaged in seeking its solution, by making known the results so far attained in the course of investigations conducted during the past

nine months in an up-to-date food factory. The investigations are incomplete, and doubtless some of the conclusions reached may have to be modified in the light of further experience and study.

These conclusions may be briefly summarised as follows:—

1. In spite of the opinions expressed at the meeting of the Section of Dermatology of the Royal Society of Medicine in October, 1924, it appears that there is a definite dermatitis to which persons engaged in factories manufacturing bread and pastry are peculiarly susceptible. It does not seem to be confined, however, to persons actually handling flour, dough, or sugar, but may, and does, affect workers in other departments of the same factory, thus suggesting that the causative agent may be carried in the dust of such factories. Certain mycelial fungus growths have, indeed, been cultured from this dust, but so far no definite connexion can be traced between these growths and those found in the skin lesions.

2. The skin lesion is primarily a vesicular eruption, similar in appearance to the sudamina or miliaria associated with obstruction of the sweat ducts, and is accompanied by intense itching, especially when the part is warm. That this irritation is due to distension of the vesicles is proved by the fact that it is immediately relieved by puncturing them. In the early stage the eruption is confined to the palmar aspect and inter-digital folds of one or both hands, the primary focus always being in the skin area most exposed to irritation or abrasion in the particular occupational process in which the patient is engaged. This primary vesicular lesion is rapidly followed by secondary lesions, the earliest of which are multiple fissures in the inter-digital spaces and on the dorsal aspects of the fingers. It quickly spreads at the periphery and, if not arrested at this stage, staphylococcic infection supervenes, and the condition then presents the clinical picture of eczema vesiculosum.

3. The primary vesicles contain a clear straw-coloured fluid. Microscopical examination of this fluid when obtained by aseptic puncture of the vesicles reveals the presence of numerous yeast-like mycelial growths.

4. The disease spreads by inoculation of abrasions in the surrounding area with the fluid from the original vesicles, these abrasions being caused, simultaneously with the rupture of the vesicles, by the scratching which the intense irritation incites.

5. The disease is communicable from one person to another by inoculation, which seems to take place through minute abrasions of the epidermis such as are common among manual workers. This is demonstrated by the fact that a small abrasion in the palm of my own hand, caused by a piece of stalk when rubbing up plug tobacco, became infected when collecting the fluid from a patient's vesicles, the same mycelial fungi being found in the vesicles which subsequently developed, although I had never handled flour or dough. I have kept this lesion "alive," though under control and confined to an area covered by a sixpenny piece, for eight months.

*Prophylaxis.*

As regards prophylaxis, my experience in a factory employing over 5000 persons, more than two-thirds of whom are directly engaged on food-producing processes, seems to indicate that the incidence of the disease can be effectually controlled by comparatively simple preventive measures. Those I have adopted—so far with conspicuous success, as in spite of the very large number employed only three persons are at present under treatment for this disease—are the following:—

(*a*) The exclusion as far as possible from dough and pastry handling of all persons with dry skins which render them liable to develop chaps and cracks in winter.

(*b*) Insisting that all minor skin lesions such as cracks, abrasions, and "hang-nails" are reported at once and treated with a solution of nitrate of silver or iodine.

(*c*) Weekly manicure on special lines, including the addition of "anosol" to the soap solution used for softening the finger-nails, for workers particularly liable to contract the disease.

(*d*) Providing all workers in contact with flour, dough, pastry, and sugar with a small towel suspended from a tape round the waist, these towels being collected and washed daily. The abolition of all "roller" or "common" towels.

(*e*) Supplying bowls of a weak, harmless antiseptic solution, such as sodium hypochlorite, in suitable positions in work-rooms, and encouraging employees to rinse their hands in this solution occasionally while at work.

(*f*) Every skin eruption, however trivial it may appear, has to be reported to the medical officer immediately, and any cases detected are suspended from duty and treated at the factory surgery until well.

*Treatment.*

After trying various methods of treatment I have found Metchnikoff's ointment (subchloride of mercury 33 per cent. in anhydrous lanolin) entirely satisfactory if applied freely, rubbed in, and covered to exclude air. When possible the evacuation of the vesicles greatly hastens healing. All cracks are painted with nitrate of silver, 15 gr. to the ounce of spiritus ætheris nit., before the ointment is applied. A case so treated in the early stage generally clears up entirely in a week, but, after resuming their ordinary work the patients continue to apply the ointment at night, when off duty, for a month or so in order to prevent relapses. Sometimes considerable patience is required to eradicate the disease, but the intelligent worker will at once report the appearance of a fresh vesicle which can then be evacuated antiseptically and aborted without further absence from duty.

I wish to acknowledge my indebtedness to Dr. Henry Semon and to Dr. Dennis Embleton for their help in the early microscopical investigations which have been carried out, partly by the latter and also in the fully-equipped biological laboratories at the firm's headquarters by Dr. L. H. Lampitt, F.I.C.

## INTRADURAL ABSCESS SECONDARY TO FRONTAL AND ETHMOIDAL SINUSITIS.

BY H. ALEXANDER COWAN, M.R.C.S. ENG.,

REGISTRAR, ROYAL EAR HOSPITAL (EAR AND THROAT DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL).

THE following case presents a number of points of interest. There was long-continued nasal obstruction and nasal discharge for over 20 years, which were relieved by opening up the ethmoidal cells and removing the polypi. Rapid recovery followed, and the patient was quite well afterwards for six weeks. There was then a sudden development of signs of increased intracranial tension, all within 24 hours after the patient was readmitted to hospital. These signs pointed to abscess of the frontal lobe, and a frontal abscess was diagnosed, but post mortem no pus was found in the brain substance.

*Clinical History.*

A pale, thin man, aged 41, came to the out-patient department of University College Hospital on Jan. 8th, 1925, complaining of nasal discharge, nasal obstruction, and frontal headache. He said that he had suffered from nasal polypi for 20 years, and had them removed on several occasions. On examination his nose was full of polypi on both sides; transillumination showed both antra dark. He was admitted to hospital on Feb. 1st and operated on next day by Mr. J. F. O'Malley.

A large number of nasal polypi were removed from both sides of the nose, the ethmoidal cells being already opened up. The naso-frontal ducts were curetted with rasps to provide adequate drainage. Both antra were punctured and washed out, but neither contained pus.

The patient went home apparently quite well on Feb. 7th. He attended the out-patient department weekly and seemed much improved, and was progressing well. On March 26th, after a week of intensely cold weather, he came again to the out-patient department and complained of having suffered very badly from headaches for the past few days. He had a profuse nasal discharge, worse on the left side, his temperature being 101·4° F.

He was readmitted to hospital on March 27th and treated with inhalations and weak iodine irrigations. On April 1st he was extremely restless and made several attempts to get out of bed; he also appeared to have difficulty in speaking. At 1 P.M. he was completely aphasic and could not understand anything said to him. Later in the afternoon slight

hemiparesis developed on the right side. At 6 P.M. he was seen by Dr. F. M. R. Walshe; he then had slight but definite right hemiparesis, face, arm, and leg being affected, and some ptosis and external strabismus of the left eye. He appeared unable to express himself in answer to questions and showed a considerable defect in comprehension of spoken speech. He was somewhat stuporose and inclined to be restless. An abscess of the left frontal lobe was diagnosed.

*Operation.*

An external frontal sinus operation was performed on the same evening by Mr. O'Malley; the sinus was found to be full of pus, but no track into the skull could be found. The lining membrane was very much thickened and the naso-frontal duct partially blocked, which was then opened freely into the nose. The frontal bone was then opened just above the superciliary ridge, and as soon as the dura was exposed it was seen to bulge. On incising the dura over an ounce of thick yellow pus poured out, which seemed to come from the frontal lobe, as this presented in the wound. Drainage was established with two rubber tubes placed side by side. A tube was also put through the frontal sinus and carried into the nose. Throughout the night the patient's condition became worse and he died the next morning.

*Post-mortem Examination.*—The following was the condition found. There was pus in both frontal sinuses, a large intradural abscess was on the left side, producing pressure on the left frontal cerebral cortex; there was also a collection of pus at the base of the brain. No cerebral abscess was found, but there was pus in the left lateral ventricle.

I must thank Mr. O'Malley for permission to publish these notes.

# Reviews and Notices of Books.

INTERNAL SECRETIONS.

*The Chemical and Physiological Properties of the Internal Secretions.* By E. C. DODDS, Ph.D., D.Sc., M.B., B.S., Professor of Biochemistry in the University of London; and F. DICKENS, M.A., Ph.D., Assistant in Biochemistry. London: Humphrey Milford, Oxford University Press. 1925. Pp. 214. 8*s.* 6*d.*

THE object of this small volume is to present a summary of the literature dealing with the chemical aspects of the internal secretions. This includes the methods for preparing active extracts, the isolation and purification of the active principles, a discussion of their chemical constitution, and of the various methods used for standardising the products. Up to now information covering these various points was scattered very widely throughout scientific memoirs and had to be sought for sometimes even in the files of the Patent Office. The work has been done with great care and a highly technical subject is presented in such a clear and interesting manner that it can be followed without difficulty even by those who are possessed of only an elementary knowledge of biochemistry. A bibliography is appended to every chapter and all the references given have been consulted personally by the authors.

The book begins with the internal secretion of the pancreas—insulin—and the insulin-like substances obtained from other sources. This is followed by the various active substances obtained from the anterior and posterior lobes of the pituitary—tethelin, pituitrin, histamine. The next chapter deals with the various active preparations obtained from the thyroid. A brief but very interesting chapter is devoted to the ovarian hormone. Here the authors state that they have succeeded in confirming the observations of Hermann and Frinkel and of Allen and Doisy, who obtained active preparations capable of inducing œstrus. A chapter is devoted to adrenalin, and the final chapter deals with secretin, the parathyroid glands, and spermine.

The title of the book is somewhat misleading in giving the impression that the physiological properties of the internal secretions have received the same careful and exhaustive treatment as the chemical properties. If this had really been accomplished the book would have had to be greatly expanded. As it is the authors have dealt in considerable detail mainly with those problems in which they are especially interested. Thus the action of insulin is subjected to a clear and detailed discussion, and the conclusion is arrived at that no adequate explanation has as yet been offered. Pituitrin is also treated fairly fully. But the sections dealing with adrenalin and the thyroid hormone are short and far less complete. The former begins with the statement that the most important property of adrenalin is its pressor effect; the latter opens with the remark that the most important action of thyroid tissue is its ability to restore cretins and myxœdematous patients to normal. If we mean by physiological properties the part played by hormones in the normal organism then the properties quoted would appear to be among the least important. The statement that adrenalin produces no effect upon the pupil unless the superior cervical ganglion is excised applies only to local application, and we should have thought that the effect of toxic doses of adrenalin was not indefinite as stated, but clearly to be seen in intense pulmonary congestion and hæmorrhage. The action of adrenalin on metabolism is discussed in a few lines and summed up in the remark that "little general effect can be found except the glycæmic reaction." But this reaction requires very massive doses of adrenalin, exceeding probably the amounts secreted under physiological conditions, and no reference is made to the extensive literature based on the work of Cramer, Boothby and Sandiford, Aub and his collaborators, and more recently of Cannon, which shows a general agreement to the effect that adrenalin increases the metabolism, raises the heat production, and is secreted as a physiological response to cold, contributing to the heat regulation of the body.

In the section dealing with secretin no mention is made of the evidence presented by Prof. Dodds himself some years ago to the effect that the formation of secretin by acid may only be an unimportant factor in pancreatic secretion. In the section on the parathyroids reference might have been made to the work of Dragsted and of Luckhard on the intimate relation of diet and the function of the parathyroid glands as well as to the recent striking therapeutic results obtained by Scott in sprue, since they have a bearing on the function of these glands in relation to calcium metabolism. These little shortcomings, as we have felt bound to regard them, do not, however, affect the main object of the book, and can be readily rectified on revision.

As a readable and reliable work of reference on the chemistry and biochemistry of the internal secretions the book is strongly to be recommended. Literally, to repeat the cliché, it fills a long-felt want.

DENTAL STUDY AND PRACTICE.

*The Anatomy of the Root Canals of the Teeth of the Permanent Dentition.* By WALTER HESS, M.D., D.D.S., Professor of Operative Dentistry in the University of Zurich. *The Anatomy of the Root Canals of the Deciduous Dentition and the First Permanent Molars.* By Dr. Med. Dent. ERNST ZÜRCHER, School Dentist of Zurich. London: John Bale, Sons and Danielsson. 1925. Pp. 199. 16*s.*

THE conception of the root canal of a tooth as a funnel-shaped space of simple form, extending down the root of the tooth, is still tacitly assumed to be correct by many dentists. Were this so the problem of filling the root canal of a pulpless tooth would be comparatively simple. The examination of teeth by histological and other methods, dating as far back as 1844, has shown that this conception is inaccurate. But until a technique could be elaborated which would demonstrate the exact shape of the root canals of the teeth by a cast of their interior, the dental profession was content to ignore the scattered observations of this branch of dental anatomy. Hess, following up the work of Preiswerck, Fischer,

and others, has devised an ingenious method of obtaining a cast of the root canals by filling them with vulcanising rubber, such as is used for dentures, under pressure, and then vulcanising it so that it became hard. The tooth was then dissolved in acid, leaving a solid cast of the canals.

Using this method on a large number of teeth Hess has established the fact that the root canals of the teeth are of surprising complexity. They possess numerous branches, and, instead of terminating in a single apical foramen, frequently break up into a series of fine branches like the delta of a river. Accounts of this work have been published in this country and Hess's work confirmed by Parfitt and others, but the complete text with the original illustrations now receives translation for the first time. The bearing on operative technique is obvious. The problem of filling a root canal so completely that infection cannot penetrate, already difficult, now becomes intensified. Mr. W. H. Dolamore, in his preface, suggests that some method of impregnation by metallic silver, as advocated by Howe, may provide the solution of this problem. An interesting point brought out by Hess is that the canals tend to become more complex as age advances by a process of intra-canalicular calcification which forms partitions of dentine in the course of the root canal.

The book is illustrated by many plates (rather confusedly numbered) showing the various forms of canals met with in each tooth of the human series at different ages. It is a notable and important contribution to dental anatomy. The unnamed translator has done his work well.

---

*Bacteriology for Dental Students.* By R. B. HERVEY WYATT, M.A., M.B., Ch.B., D.P.H., Lecturer in Bacteriology at Birmingham University. London: Humphrey Milford, Oxford University Press. 1925. Pp. 134. 6*s.* 6*d.*

THE problem of teaching bacteriology to a student whose curriculum is already crowded is not easy to solve. Obviously the dental student should at least know the elements of the subject, and rather more than the elements of that part of bacteriology which is concerned with infections of the mouth. This book, written by one who is engaged in lecturing to dental students, is a successful effort to provide a short manual of the subject which, though elementary, yet covers the ground in a readable and accurate manner. The book is intended to accompany a practical course such as is undertaken by the dental students at Birmingham University. So used it should prove of value. The chapter on the bacteriology of the mouth might with advantage be extended beyond the 11 pages given to it. The dental student should know all there is to know about the bacteriology of dental caries and pyorrhœa. It would have been helpful if the author had reviewed the literature in more detail. The work of McIntosh, James, and Lazarus-Barlow is mentioned, but the later work of Kilian Clarke on the *Streptococcus mutans* is not referred to. It is curious that nowhere are Koch's postulates given. The book is well produced and the price moderate. It fills a distinct gap in dental literature.

---

*The Mathematics of Dental Prosthetics.* By F. W. Rapp. London: John Bale, Sons and Danielsson. Pp. 42. 5*s.*

SINCE the days of Bonwill a considerable amount of attention has been paid to the mathematical side of denture construction, and there is no doubt that dental prosthesis has benefited by the scientific principles enunciated. This little book is evidently written by one who has expert knowledge of the prosthetic side of dentistry. The author has devised a set of instruments which, he claims, will make for greater accuracy and increased efficiency. Mr. Rapp considers the problem of denture construction to be an engineering one, and in a sense this is true, for a denture to be stable and efficient must conform to certain mechanical principles. But the stresses and strains of a denture in any given mouth cannot be calculated exactly in the same way that an engineer can calculate them when using steel or concrete, for the tissues of the mouth differ in different individuals. In spite of the elaborate formulæ which have been worked out by various authors for constructing dentures, prosthesis still remains as much an art as a science. Rule-of-thumb methods often give excellent results, but sometimes fail where more scientific methods may succeed. The non-mathematical reader need not be daunted by the title of this book, for only an elementary knowledge of mathematics is subsumed, while the technique outlined by Mr. Rapp is not difficult. Though it will not solve all the difficult cases met with in practice, this technique is worth a trial.

---

FAIR WINDS AND FOUL.

A Narrative of Daily Life Aboard an American Clipper Ship. By FREDERICK PERRY. London: Martin Hopkinson and Co. 1925. Pp. 204. 10*s.* 6*d.*

Mr. Perry writes with first-hand knowledge, for he served in the American Mercantile Marine and worked his way up from being a "Rufus Hatch cadet" to being a mate in the Pacific Mail Steamship Company and the California Clipper Ships Company. The voyages described in this book are those made by him during the period of his service from third mate to mate. His description of the voyage of the clipper *Continental* from New York to San Francisco is as thrilling as any description of rounding the Horn that we have ever read. These descriptions usually are exciting, and Mr. Perry's narrative is worthy to stand beside Mr. Jack London's "Mutiny of the *Elsinore*" and Mr. Basil Lubbock's account in "Round the Horn" of life before the mast. The *Continental* took 172 days to make out her voyage and she took 21 days to make her westing, water ran very short, and on the 150th day out scurvy appeared. Off the Horn the *Continental* spoke the *Flying Dutchman*—at any rate some ship whose attributes were sufficiently mysterious to have gained it that appellation in less sophisticated days. Mr. Perry mentions that the captain believed scurvy to be contagious and isolated the four cases which first appeared, when no more followed, which confirmed him in his opinion. He tells a gruesome story of an English ship, the *Baltic*, which was towed just behind the *Continental* into San Francisco, having been 185 days out; the *Baltic* had 39 out of a total crew of 42 dead from scurvy, the only survivors being the captain, the carpenter, and the cabin boy. Mr. Perry's narrative is simply and clearly written, and he gives an excellent description of the rigging and sails of a clipper, which makes comprehension of his story fairly easy for a landsman. Altogether a very good book.

---

INTERPRETACION DE LAS APÉNDICITIS.

Indicaciones Operativas. By Dr. JUAN MARIÑON. Barcelona: Libreria Medica y Tipografia. M. Rojo. Pp. viii. + 92.

THIS small volume, which is the prelude to a larger one, deals mainly with the author's own experiences, who, however, gives no statistics to show the extent of that experience, nor does he indicate whether it was derived from private or hospital practice. We note that he seems only recently to have encountered a case of perforated appendix without rise of temperature or pulse, though he is familiar with most forms of appendicular trouble. In the indications for operation the rules are not laid down with sufficient clearness, giving the impression that the author has not always the courage of his convictions. He states that the

first attack of appendicitis unfailingly prepares the soil for future attacks which are usually of a much more dangerous character, but later he agrees with Sonnenburg that many of the gastro-intestinal disturbances in the first two years of life are appendical in origin but do not call for interference and leave no ill-effects. The truth is that appendicitis is rare at that age, but when it occurs in definite form it is very dangerous and requires prompt intervention. The author agrees with all surgeons of experience that the ideal practice is to operate in the first 48 hours, but apparently after that would, if possible, leave an abscess to be absorbed in the absence of urgent symptoms. He lays stress on the unexpected difficulties and dangers incurred when operating on quiescent cases, and quotes with apparent approval the surprising doctrine attributed to Roux that no quiescent case calls for operation until it has been free from active symptoms for two years. It is difficult to imagine that many patients, after being free from symptoms for two years, would willingly offer their abdomens to the surgeon's knife, while the author gives his countrymen a bad name for promptitude in that respect. In the subchronic cases (p. 82) —the "grumbling" appendices which are never really acute or really quiescent, but always a source of danger—it would seem hard to find a suitable moment for intervention, if this doctrine is correct. The accepted practice surely is not to give appendicitis a second chance where good reasons exist for suspecting it.

Dr. Mariñon's arguments, including the incontrovertible statement that exact diagnosis is impossible without opening the abdomen, all really tend to the same logical conclusion—viz., that in the absence of serious contra-indications every case should be explored. It is to be hoped that in a future book, which he forecasts, he will make his position clear.

## JOURNALS.

QUARTERLY JOURNAL OF MEDICINE.—The July number contains the following articles: Four Cases of Congenital Dextrocardia, including a Case with Sino-auricular Block, by Leonard Abrahamson. All of the cases here recorded showed dextrocardia with complete transposition of the viscera. The article is illustrated by a series of electrocardiograms, one of which reveals a state of sino-auricular block.—Acute Ileocolitis in Children, by Robert Cruickshank. By ileocolitis is understood a condition in which diarrhœa is present, accompanied by toxic symptoms, and in which mucoid stools containing blood and pus are passed. Clinically it is indistinguishable from bacillary dysentery, but occurs sporadically in this country. The stools of 12 cases were examined and *B. dysenteriæ* of Flexner-Y type was isolated in seven. It is suggested that the most appropriate treatment is the administration of magnesium sulphate, together with injection of antidysenteric serum.—The Mode of Inheritance of Hereditary Ataxia, by W. Russell Brain. In hereditary ataxia it is probable that the disease depends on the presence of two Mendelian characters, one of which is a dominant and the other a recessive. The mode of inheritance cannot be explained on the theory that the disease behaves as a single Mendelian character, whether dominant or recessive. — Heredity in Polycystic Disease of the Kidneys, by H. W. B. Cairns. An interesting account is given of the occurrence of polycystic diseases of the kidneys in three successive generations of a family living in the East End of London. Myopia was also found to be present in many members of the family, either together with the polycystic disease or separately. The literature dealing with the hereditary transmission of the disease is considered and reference made to several of the published cases. The article is illustrated by a plate showing a polycystic kidney and a liver cyst obtained from the same case.—Critical Review: Cholesterol in Health and Disease, by J. M. H. Campbell. An introductory account is given of the physiology of cholesterol. Various points are discussed, such as the distribution of cholesterol throughout the body, the relationship of cholesterol to fat and lecithin, cholesterol and lipæmia, cholesterol in the blood during pregnancy, and in various pathological states as jaundice, gall-stones, nephritis, arteriosclerosis, diabetes, and anæmia. The influence of cholesterol upon hæmolysis and the rate of sedimentation of the red cells is also considered.

BRITISH JOURNAL OF SURGERY. — The July number (No. 49) is noteworthy in that in it a series of special articles dealing with pathological anatomy has been commenced. The Editorial Committee announce that it is the intention in these articles—which will eventually form an "Atlas of Pathological Anatomy"—to describe some of the most instructive and historical specimens in the Hunterian Museum of the Royal College of Surgeons of England and in other metropolitan and provincial museums. Illustrations will be both in colour and in black and white, with X ray pictures and drawings of microscopical sections. In this issue nine specimens of sarcoma of the long bones are illustrated and described. There can be no doubt that this series will be of the greatest interest, and of great value as a permanent and convenient record of many supremely instructive specimens.—Sir D'Arcy Power contributes his XVIIth Eponym on Charcot's Joints, in which he describes with much interest Charcot's original contribution.—F. G. Bell discusses at considerable length the characteristics of the teratoid group of testicular tumours.—A. C. Perry has investigated the after-results in 653 cases of operations for malignant disease of the breast. His conclusions are the result of careful analyses, and are worthy of notice.—G. P. B. Huddy, having collected four clinical and four post-mortem cases of urethral pouches, gives an interesting account of their pathology, symptoms, and treatment.—H. Morriston-Davies describes his technique in the operation of extrapleural thoracoplasty.—W. M. Carrick contributes a short note on the pyelographic appearances in cases of polycystic disease of the kidneys.—H. W. B. Cairns publishes some observations on the ætiology and treatment of cystitis.—A. F. B. Shaw and R. P. Smith report six cases of Reidel's chronic thyroiditis; in view of the acknowledged difficulty of accurate readings of thyroid histology, this is a valuable contribution.—In Vol. IX., 1921, 16 cases of surgical treatment of aneurysms of the aorta by wiring were reported, and now five others—three at length—are put on record. The three in detail are by H. M. Colt, C. J. Marshall, and C. P. G. Wakeley. The two former were aneurysms of the abdominal and the latter of the thoracic aorta. It is instructive to note that Colt's and Marshall's cases died of acute dilatation of the stomach, and the post-mortem examination revealed the sacs full of firm clot.—V. Z. Cope's Hunterian Lecture on Extravasation of Bile is here reported.—E. H. Shaw comments upon the pathology of 11 cases of carcinoma of the vermiform appendix.—R. O. Ward contributes a paper on 11 cases of vesical diverticula, dealing with their clinical signs and treatment.—W. E. M. Wardill reports a case of polypi in the bowel causing intussusception.—Sir Cuthbert Wallace has a short note on two cases of advanced carcinoma of the breast treated by the interscapulo-thoracic amputation.—The following short cases are reported:—T. B. Mouat: Two cases of polypus of the stomach. E. T. C. Milligan: Intussusception of small intestine through a fæcal fistula. A. Rendle Short: Case of von Recklinghausen's osteitis fibrosa. C. P. G. Wakeley: Ossifying chóndroma of a rib mistaken for sarcoma. H. W. B. Cairns: Renal colic as a late complication of nephrectomy. S. Pringle: Cyst adenoma of pancreas. Arthur Evans and S. Cade: Ectopic ovary. H. Drummond: A case of heart suture. Sir Hugh Rigby: Snaring of caput cæci and appendix by a band. W. Adams: Two cases of foreign bodies in the alimentary tract. F. G. Ralphs: Sarcoma of renal pelvis.

# PUBLIC HEALTH ADMINISTRATION.

## ADMINISTRATIVE MACHINERY IN EUROPEAN COUNTRIES.*

### I. THE NETHERLANDS.

HOLLAND is a constitutional and hereditary monarchy; the legislative authority is laid with equal responsibility on the Sovereign and the Parliament, the latter consisting of an Upper and a Lower Chamber. Each of the 11 provinces has a Commissioner, nominated by the sovereign, and a representative body whose members are elected for four years. The representative body elects a permanent commission of six members to administer the common laws. The provinces are further divided into 1100 communes, each with its communal council, and an executive body called the Communal College, which consists of the burgomaster, elected by the sovereign, and from two to six aldermen, chosen from among the members of the college.

The public health administration, as organised by the law of 1920, is under the control of a Director-General of Public Health, who is directly responsible to the Minister of Labour for the activities of his department. The Ministry is advised by a Public Health Council, comprising some 15 subcommittees dealing with special departments: general and social health work, infectious diseases, general pharmaceutical work, pharmaceutical and chemical work with particular regard to preparation of commercial chemical products, feeding, hygiene of childhood, tuberculosis, alcohol, cattle and meat examination, "water, field, and air," medical assistance and nursing, venereal diseases, housing problems, statistical researches, and ankylostomiasis.

The country is divided into health inspectorial districts, each with its personnel responsible for the observance of public health regulations. There are also 134 health committees, chosen from local inhabitants, and appointed by the Provincial Governor. Neighbouring communes appoint a special doctor for the schools or engage one of the doctors residing in the district to fulfil the duties of this officer. At Amsterdam there is a communal medical and sanitary service with a director and several senior officers. At The Hague there is a communal medical service and a school medical service, each with its director. At Arnhem there is a school medical service, but no communal medical service. At Rotterdam and at Utrecht the two services are amalgamated. There are no provincial services. The Government intends to lay before the National Assembly a Bill regarding the health services as soon as circumstances permit. It has been proposed to appoint school doctors in each district, but this proposal has not so far been carried into effect.

There are no provincial disinfection services in Holland such as exist in Belgium. Provincial services now exist in certain provinces (Gelderland, Friesland, Groningen, Northern Holland, Overyssel, and Limburg), but they have been established by associations such as the "Green Cross" or the "White Cross"; there exist also, certain communal disinfection services approved by ministerial decisions. These associations maintain disinfection services approved by the Ministry, and receive a fixed subsidy on this account in the same way as the communes. The State grants to the communes a subsidy of 50 per cent. of the cost of establishing, extending, and maintaining the disinfection service.

*Organisation of Health Inspection.*

Article 2 of the law on Protection of Public Health (1919) provides for the establishment of a Health Council to advise the Government in regard to any measures it may take to promote public health. Article 3 of the same law entrusts the duty of health inspection to (*a*) the principal public health inspectors; (*b*) the public health inspectors and officials assisting them; and (*c*) the Health Commissions. The Burgomasters have to send to the Inspector-General a monthly return of the deaths which have occurred in their communes, and they are also bound to inform as soon as possible the appropriate inspector of the departure, death, or if they are aware of it, cessation of practice of any doctor, dentist, or chemist or midwife in their commune. Health Commissions are established for each commune which contains more than 18,000 inhabitants. Several communes, the joint population of which does not exceed 40,000, may have a Health Commission between them. The expenses of these Commissions are borne by the commune, but the salaries of their secretaries are paid by the State Treasury. The decisions of the communal councils regarding matters of public health may only be promulgated, supplemented, modified, or repealed if the Health Commission established by the commune has been consulted.

Members of the Health Council are entitled to enter all public buildings, schools, factories, hospitals, &c., throughout the kingdom in order to see that the law is properly applied, and to enter places of residence to obtain information regarding the state of such places. Members of the Local Health Commissions have the same rights within their respective district only.

*Registration.*

The statistical work is organised by a Central Bureau of Statistics, established in 1899. The bureau publishes at regular intervals information regarding the population, births, deaths, and notifiable diseases. Registration of births, deaths, and marriages is compulsory, and the system is based on the Code Napoléon. The declaration of a birth must be made within three days, and must include hour and place of birth, names and address and profession of both parents, name, address, profession, and age of the declarant and two witnesses, religion of parents, and time and place of their marriage. "Stillborn" children include premature infants and those dying before registration. The Communal Registrar is the sole competent authority for authorising burial and the death must be certified by the medical practitioner. If death occurred without medical attendance, the body has to be seen by the "médecin de l'état civil." Information required on the certificate includes names, age, address, civil status, religion and occupation of the deceased, of the husband or wife, of the declarant, and the place of death.

Both with births and deaths certain communes ask a larger or smaller number of further questions for statistical purposes. The information relative to infant mortality is remarkably complete.

### II. BELGIUM.

The kingdom of Belgium, the most densely populated country in Europe, is an independent constitutional monarchy, and is divided into nine provinces, each having a governor, nominated by the King, and a Provincial Council, which is partly elected every four years and partly a permanent standing committee of six members. There are 41 arrondissements, which are groups of communes under Commissioners, each of the 2638 communes having self-government in all local matters, and comprising a burgomaster, nominated by the King, an elected council, and an executive "college," selected from the council.

The laws controlling public health administration fall into three main groups: (1) Those giving the National Government, provinces, or communes power to issue regulations within defined limits; (2) those specifically enumerating the rules and regulations that are to be observed; (3) certain international conventions.

The central public health administration is part of the functions of the Ministry of the Interior and of Hygiene, which has two quite separate divisions,

* Based on a Series of Reports on National Health Organisation to the Health Section of the League of Nations and on Statistical Handbooks prepared by the Section. Obtainable in Great Britain from Constable and Co.

the Administration of Public Health and the Central Statistical Department. There are also various technical services and advisory bodies.

Seventeen provincial medical commissions exercise a supervision over medical practitioners, midwives, and dentists, and are responsible for the observance of regulations relating to public health. Provincial inspectors of hygiene have recently been appointed, with wide executive responsibilities and duties. They visit and advise local administrations as to their obligations and public health interests, and inspect the services or institutions within the jurisdiction of local sanitary authorities. They forward monthly reports to the central administration dealing with their work, and special reports after any inspection which has reference to the sanitary condition of a particular area or the outbreak of a serious epidemic. Such reports include the results of laboratory investigations, prophylactic measures, and the tracing and disinfecting of carriers. The inspectors also forward every ten days summaries of all notifications received, with a short summary of the state of the public health in their area. Laboratory and disinfection services are reported on monthly.

The provincial authorities provide certain technical, laboratory, and disinfection services. Certain communes combine for public services, such as water distribution and hospitals, but there is no district arrondissemental public health administration. All communes that have three doctors or two doctors and a pharmacist have local medical commissions similar in their activities to the provincial medical commissions controlled by the central health administration. There are hygiene services in some of the towns and larger communes.

*Statistical Work.*

Every commune maintains registers of population, births, deaths, and marriages, and returns to the Central Statistical Department the basic tabulations from these registers. Births must be registered by the father, or other person present, before two witnesses, at the mairie within three days. In the towns and some of the communes there is a system of verification, whereby the father notifies the mairie within 24 hours, the official notifies the local "médecin de l'état civil," who visits the home to verify the data, fills up the certificate, and hands it sealed to the father, who then makes his declaration at the mairie within three days. "Stillborn" children include also those dying before registration—i.e., within three days of birth. They are recorded in a special register, separate from the ordinary births or deaths register. Deaths are notified by the nearest relative to the "officier de l'état civil," who is the sole competent authority to authorise burial. The registrar visits the house to satisfy himself that death has occurred, although in larger communes he delegates this duty to a "médicin de l'état civil." In some cases the certificate of the attending physician is accepted in lieu of this visit. Certification of the cause of death is not compulsory, but medical practitioners and other persons having knowledge of the cause of death are urged to give this information to the authorities. There is no system of medical verification of these particulars.

## III. SPAIN.

The kingdom of Spain, with a population of 21 millions, is a hereditary and constitutional monarchy, the legislative authority being exercised by the sovereign in conjunction with the two houses of the Cortes. There are 49 provinces under their respective governors, who act under the direction of the elected provincial council. The council meets yearly, and is represented by a permanent "standing committee." Each commune has its own elected council, with a mayor, who acts as chief executive officer and justice of the peace. Neither the executive nor the Cortes may interfere with the provincial, communal, or municipal administrations, except when such authorities exceed their legal powers to the detriment of public interests.

The responsibility for the organisation of general health services rests on the General Health Department of the Ministry of the Interior, under a Director-General of Public Health. The four main sections are:

1. *The Section of Public Sanitary Institutions.*—This controls such health institutions as the National Institute of Hygiene of Alfonso XIII., the general sanitary epidemics organisation, and the special institutions for combating particular diseases—e.g., tuberculosis, cancer, malaria, leprosy, &c.

2. *The Health Section of the Interior.*—This section, under an inspector-general, controls and directs the activities of the 49 provincial inspectors, and also the medical, pharmaceutical, and veterinary services of the kingdom.

3. *The Health Section of the Exterior*, also under an inspector-general, is responsible for all sanitary measures at ports and frontiers.

4. *The Administrative Section* concerned with general measures.

The statistical office of the department compiles vital statistical data from the material received.

In each province there are sanitary corps, maintained by a 2 per cent. levy on each municipal or communal budget. Municipalities generally have their own municipal officers paid from municipal funds. Catalonia has a specially adapted health service of its own, combining under one administration the public health activities of the four Catalonian provinces.

The Royal Decree of March 8th, 1924, issued and signed by the Military Directory, provided for the reorganisation of municipal services and outlined their responsibilities towards public health matters, i.e.:

*In Towns of not more than 15,000 Inhabitants* (Art. 201).—Supervision of all drinking water; disposal of waste matter, excreta, &c.; inspection and improvement of dwellings, prohibition of insanitary habitations, &c.; sanitary supervision of public highways, stables, slaughter-houses, markets, lavatories, baths, and cemeteries; supervision and improvement of cesspools and prohibition of their use where they prove to be insanitary; inspection of schools and school-children; control of infectious diseases and measures to combat the outbreak of epidemics; vaccination of all children before the age of six months; revaccination of population where necessary.

*In Towns of over 15,000 Inhabitants* (Art. 204).—Removal of cesspools and gradual substitution of modern systems for dealing with waste matter and excreta; census of dwellings under direction of municipal medical officers of health; organisation of pure water-supply which will provide a minimum of 200 litres of pure water per day per person.

*In Towns of over 30,000 Inhabitants* (Art. 205).—Provision and maintenance of a municipal laboratory for the analysis of foods, drinks, drugs, and similar products, and for other duties in the interests of the inhabitants. Establishment of one or more disinfecting stations for beggars, &c., and one or more free bath-places.

*In all Towns over 15,000 Inhabitants* (Art. 206).—Compulsory vaccination against small-pox, provision of adequate services for combating outbreaks of infectious diseases, especially typhoid and typhus fevers, diphtheria, infantile cholera, trachoma, and tuberculosis.

The statistical work is under the control of the Director-General of Statistics, who is advised by a General Council of Statistics. Registration of births, deaths, and marriages is compulsory, and the magistrates of each commune are responsible for the custody and maintenance of the registers, the records being forwarded monthly to the Provincial Statistical Bureau. Births must be recorded within three days by the father or other person present at the time, with the age, profession, and nationality of the parents. The registration of stillbirths has been obligatory since 1919, and must be effected within 24 hours. "Stillbirth" includes babies dying within 24 hours of delivery. Deaths must be declared within 24 hours, accompanied by a medical certificate authenticating the fact and cause of death. In the event of sudden, accidental, or violent death a post-mortem examination is made by the judicial medical officer, usually assisted by a private practitioner.

(*To be continued.*)

# Reports and Analytical Records.

## B.D.H. CAPILLATOR.

(BRITISH DRUG HOUSES, LTD., 16–30, GRAHAM-STREET, CITY-ROAD, N. 1.)

THE pH value is a number used to express the active acidity or alkalinity of any fluid, the pH of pure water at 18° C. being taken as the standard of absolute neutrality, where the figure is usually given as 7. The concentrations of H and OH ions here are exactly balanced, and the balance will be upset by the addition of any acid or alkali. The colorimetric method is the most widely used one for determining pH values and in the hands of those who understand the procedure the technique is comparatively simple, little apparatus being required and the test taking practically no time. The British Drug Houses have submitted to us a pH capillator which provides an improved method. The capillator consists of a white card on which is mounted a series of capillary tubes in which buffer solutions containing an indicator are sealed. The tubes are mounted three together, thus forming a series of strips of colour, each strip being about ¼ in. wide and marked with its exact pH value. The series of colour standards on each card covers the complete colour change of the indicator. The determination of pH is carried out by using a capillary tube as a pipette and measuring by this means equal quantities of the liquid under examination and indicator, mixing the two in a small watch-glass, and then drawing the mixed liquids back into the capillary tube. The colour of the mixed liquids is then matched against the "Capillator" standards. Owing to the small quantity of fluid required for a test (one drop is sufficient), the capillator is invaluable for the determination of the pH of such liquids as urine, saliva, tears, plant juices, and innumerable other organic fluids. Another advantage of the capillator method is that the pH of slightly coloured fluids may be determined directly without the use of any compensating device, such as is necessary when using test-tubes for comparison purposes. Owing to the very thin layer of liquid in the capillary tubes, the inherent colour of urine and other similarly coloured liquids is negligible. To determine the pH of any liquid, it is necessary first of all to choose a suitable indicator. A preliminary test is made with B.D.H. universal indicator, the range of which is from 3·0 to 11·0; thereafter a suitable particular indicator is chosen, such as, say, thymol blue (pH 1·2–2·8), bromo-cresol purple (pH 5·2–6·8), or phenol red (pH 6·8–8·4), and the accurate estimate is thus made. The compactness of the capillator is such that a complete set comprising nine or ten colour standards of an indicator occupies a space of only 3 in. by 4⅛ in. by ¼ in. It is thus possible to carry in the pocket a number of capillators of different indicators covering a large range. This valuable modification of the colorimetric method is due to Dr. Henry A. Ellis.[1]

## KHARSULPHAN.

(BURROUGHS WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

In order to simplify the treatment of syphilis by the administration of arsenobenzol compounds, Kharsulphan has been manufactured under the licence of the Board of Trade and biologically tested under arrangements approved by that Board, while the Ministry of Health authorise the use of the preparation under the Public Health (Venereal Diseases) Regulations. The preparation is intended for subcutaneous and intramuscular injection only, and its advantage is that no elaborate technique is required either in preparing solutions or in making injections. The dose is simply dissolved in 1 c.cm., or more, of saline or distilled water in the barrel of the syringe and is then ready for immediate use. The dose for each patient must be prepared separately as required, and on no account be stored or allowed to stand. It is readily soluble and there need be no delay in preparing individual doses. For subcutaneous or intramuscular injection the commencing dose should be 0·15 g. and the following range of doses is given. Men, 0·15 g. to 0·6 g. (approximately 2–9 gr.); women, 0·15 g. to 0·45 g. (approximately 2–7 gr.); children, 0·15 g. to 0·3 g. (approximately 2–4 gr.); infants, 0·05 g. (approximately ¾ gr.). In intramuscular injection strict asepticity must be observed. The skin should be painted with iodine, and the syringe and needle boiled for five minutes in a 5 per cent. solution of carbolic acid. Treatment should commence with small doses at intervals of two or three days and as the dose is increased the interval should be lengthened. It may have to be continued for many months. The drug is contra-indicated in cases of advanced visceral disease, and caution is necessary in cases of arterio-sclerosis, diabetes, advanced nervous disorders, and certain skin diseases.

[1] An Explanation of Hydrogen-ion Concentration. The Capillator Method for the Determination of Acidity and Alkalinity in General Practice. London: H. K. Lewis and Co., Ltd. 1925.

## CREAM OF NUJOL.

(ANGLO-AMERICAN OIL COMPANY, LTD., ALBERT-STREET, CAMDEN TOWN, N.W. 1.)

The properties of Nujol have been brought before our readers in these columns on previous occasions. We have now received from the firm a new product, Cream of Nujol, in which Nujol is combined with agar-agar for use in constipation. The preparation contains no cathartic ingredient, saccharin, or sugar, and therefore can be prescribed with safety for obese or diabetic patients, and others where anything like active purgation would be harmful. The preparation is directed to the needs of those with intestinal stasis particularly in atonic form, and it can be employed over extended periods in obstinate cases without risk. It can be diluted with milk or water if it proves more palatable in this manner, and the emulsion is pleasantly flavoured.

## NOCTAL.

(W. DEDERICH, LTD., STANLEY HOUSE, DEAN STANLEY-STREET, WESTMINSTER, S.W. 1.)

Messrs. Dederich, Ltd., are the agents for the firm of J. D. Riedel of Berlin, from whom we have recently received for clinical trials a preparation of isopropyl barbituric acid termed noctal. We are informed that the clinical experiences of the specific under the hands of Berlin physicians have been satisfactory. Noctal is supplied in tubes of ten tablets of 1 gr. each, the dose being from one to two tablets.

## MEAD'S RECOLAC.

Messrs. Mead, Johnson and Co. ask us to correct a statement made in our issue of June 6th in this column with reference to the above preparation, that "full instructions how to prepare these foods are issued with the preparation." The company say that their "policy does not permit them to issue directions on or with their foods to the general public, as directions are only supplied to the medical profession, and for their prescription only." Our note referred, of course, only to the position as between the company and our professional readers, and we learn that feeding instructions will be gladly supplied to doctors through the distributors: Brooks and Warburton (A. D. S. Co.), Ltd., 40–42, Lexington-street, London, W. 1.

TILBURY SEAMEN'S HOSPITAL.—Since the new wards were opened towards the end of June the daily average number of in-patients has increased by nearly 50 per cent. A unique feature of the hospital is a separate wing exclusively for the treatment of Indian seamen, which was provided by the generosity of Mr. P. G. Singhanee, of Poona, who gave a lakh of rupees for the purpose.

# THE LANCET.

*LONDON: SATURDAY, SEPTEMBER 26, 1925.*


## THE PROBLEM OF THE MENTALLY DEFECTIVE.

THE Commissioners in Lunacy, one of the most valuable governing bodies in this country, have just issued their eleventh annual report, that is to say, the Report of the Board of Control. It is, as usual, full of useful information, and bears abundant witness to the keen industry of the Commissioners and their inspectors. Many of the points dealt with have been touched on in previous issues of THE LANCET.[1] The most important feature, however, of this report is the section on mental deficiency. The Commissioners apprehend a grave danger to the country unless the local authorities, and with them the general public and all governing bodies who bear the responsibility for defectives, regard their duty towards these unfortunate people very seriously, and put forth the utmost exertions to deal with their plight. The problem, like all national problems, is many-sided, but its two gravest aspects are undoubtedly, first, the provision of institutional accommodation, and, second, the coöperation towards one end of the four bodies who deal with mental defectives. On the whole, the local authorities are very active in their duty of ascertainment, and last year they discovered 12,300 new cases. Their returns, however, show that of those notified by local education authorities, 2197 remained undealt with at the end of the year, and that 1193 otherwise ascertained are still "subject to be dealt with." No action has yet been taken in these 3390 cases, and the reason that suggests itself to the Board of Control is significant enough to rouse the most apathetic. Local authorities are disheartened by their constant inability to obtain vacancies. Some have applied in vain to 30 or 40 institutions—one, in fact, to 156—without success, and it is hardly surprising that efforts should at last be given up.

The provision of colonies for mental defectives was seriously hampered by the war, but many of the restrictions have since disappeared, and the Board of Control is always eager to consider well-planned schemes. This is the only real solution—that every local authority should at once do its utmost to purchase a suitable estate and found a colony for its mental defectives. "Existing institutions," say the Board, "are full, and local authorities can no longer rely on charitable institutions or on the Poor-law for this provision. Unless, therefore, they give immediate consideration to this matter the beneficent intention of the Mental Deficiency Act will be hampered and will almost cease to operate. We take this opportunity of making an urgent appeal for immediate action, and we do so the more confidently because every year reveals clearly the terrible consequences of the neglect to afford this means of protection." These are strong words, uttered by those who are best qualified to speak on the subject. Let us hope that those to whom they are addressed will see their truth and act on them. Many authorities have already done so, and the names are given of 20 who have colonies in existence, six who have purchased estates, and 17 who are taking steps towards this provision.

[1] THE LANCET, 1921, ii., 723.

The second need, that of real coöperation between different governing bodies, is almost as urgent as the first. Besides the local authorities, who are the mental deficiency committees of the county or county borough councils, three others come into contact with defectives. They are the committees of mental hospitals, the staffs of H.M. prisons, and the governors of industrial schools and reformatories. The Board of Control points out that there are three ways in which coöperation between medical officers would greatly help towards the efficient control and care of mental defectives. One is that the medical officers of the local authority and the local mental hospital should meet and visit together the institutions for which each is responsible. It is the Board's policy to withdraw gradually all defectives from mental hospitals, beginning with children and young persons, and this policy would be much simplified if the understanding between these two departments were more complete. The melancholy progress of defectives in and out of mental hospitals, with intervals in prison or the workhouse, would become considerably rarer. A second way is for the medical officers of the local authority and those of the prisons to confer and visit one another's institutions. The wider range of study of mental deficiency which is available in a certified institution would be an advantage to prison medical officers, while the county medical officer might find in prison many types of defectives with whom he may have to deal on their discharge. Many forms of deficiency may be recognised by one authority and not by the other, and interchange of histories and free consultation would be of the utmost value. Thirdly, if the managers and medical officers of industrial schools and reformatories met the local authorities and their medical officers, the latter could take over young defectives and give them the protection and training without which they would certainly sink into pauperism and crime. A break in care and supervision, especially in early youth and adolescence, has led to periods in prison or in Poor-law institutions which are harmful to the defective, and render him less amenable to kindly control when he comes at last into an institution or a colony for defectives.

We have mentioned two only of the manifold facets of this vital problem; the others will be found in very great detail in the report itself. The present administration of the Mental Deficiency Act is a dark shadow on the social life of our country, and we shall be gravely at fault if we do not do our best to improve matters. We are fortunate in that our advisers and judges in this matter are as conscientious and as determined as this report shows them to be.

## LONDON WATER.

MOST large cities now draw their water from unpolluted sources, some of them having laid hundreds of miles of aqueduct to remote and rainy mountain slopes. London has been content to drink from its own watershed, and after taking what is available from deep borings down to the chalk to obtain the remainder—being much the greater part—from three rivers, the Thames, the Lee, and the New, all highly polluted by human excreta. The labour involved in purifying this water is enormous, and to ensure safety constant vigilance is demanded from the Water Examination Department of the Metropolitan Water Board, which came into existence in November, 1905. Sir ALEXANDER HOUSTON, in his Nineteenth Annual Report to the Board[1] sets out the results

[1] London: P. S. King and Son. 15*s*.

of the chemical and bacteriological examination of the London waters for the 12 months ended March 31st, 1925, but although the results are duly set out as stated, the Report is much more than that, for HOUSTON has become the champion of London water as an abundant, cheap, safe, and palatable beverage, and his account of the doings of the Board becomes more and more of the nature of an epic. The opening of the great reservoir at Littleton by the KING on June 13th occurred since the period covered by the report, but HOUSTON foreshadows the value of increased water storage to the health of London. The reservoir doubles the storage capacity for Thames water and provides effectively against periods of drought. Procrastination facilitates enormously the purification of river water, and in this instance saves both time and money. The amount of solid matter contained in untreated Thames water is round about 100 pounds per million gallons, but in flood time it is still further increased, and during one January week in 1924 a ton of solid matter would have entered the Board's reservoirs with every four million gallons of water unless it had been possible temporarily to close the intake. The Littleton reservoir affords tremendous relief, for when full it would, in HOUSTON'S words, supply the whole world with a gallon of water per head for three days. These great settling tanks afford the opportunity of adequately sampling the London water before filtration, and the examination of the pre-filtration water goes on steadily. The loss of vitality to pathogenic microbes has now been correlated with certain physical, chemical, and bacteriological changes which occur in river water as a result of adequate storage, and it has become increasingly possible to deduce the margin of safety previous to liberation. The influence of time in destroying the vitality of pathogenic bacteria is well known to bacteriologists, and the new storage increases this safety period.

In the opposite direction of rapid purification the work of the Water Examination Department goes steadily on. The country owes much to HOUSTON'S determined advocacy of chlorination as a safe and ready method of purification. Recently the matter has been carried one stage further in an exhaustive test of super-chlorination with subsequent dechlorination. The advantages of this process are that, even with a very short period of contact, sterilisation can be made effective and serious taste troubles avoided. A drawback is the constant supervision required which lays added responsibility on the staff. The average dose of chlorine now used for Thames river water is 1 in 2·3 millions, and, so treated, 78 per cent. of the samples passed the test of containing no colon bacilli in 10 c.cm. of water. In regard to taste troubles, HOUSTON is content to remark that two million people have used this chlorinated Thames water since May, 1916, and he has not heard a single complaint. The New River supply has now been chlorinated for the sixth consecutive year, taste troubles having been avoided by skilfully contrived doses of chlorine and permanganate. Now that Mr. B. A. ADAMS'S work has succeeded in tracking down the iodoform taste of chlorinated water to atmospheric impurity, it looks as though the problem is within sight of complete solution, and, as HOUSTON puts it, the bogy of taste will before long largely be eliminated.

The Report contains much else of value and interest. In one section HOUSTON sets out a simple test (quaintly called "the three-star presumptive test") for colon bacilli in drinking water which gives reasonably accurate results under conditions of extreme simplicity. The Water Board is interested in living organisms other than bacteria in relation to the Thames. HOUSTON still regards the Thames as a salmon river in a potential sense. The water at Hampton is well aerated at all seasons of the year; it is only in the lower reaches that no oxygen remains to maintain the possibility of fish life. Were it possible even temporarily to purify the tidal portion of the Thames during the descent of the smolts and ascent of the salmon, there is nothing in the state of the upper river to render salmon life impracticable. This is a great aim which not only keen fishermen may hope to see realised within their lifetime. Birds are not considered desirable visitors at the reservoirs. Gulls, so far as is known, do not suffer from the water-borne diseases that afflict human beings, but their droppings interfere with chemical control of the water. Considerable attention has been paid during the year to frightening gulls away from the West Middlesex works and other wild fowl from the aqueduct at the East London Works. But there is no page in the Report which does not contain interest for some class of reader, and we express again cordial regret that the Report is issued in the foolscap form so dear to precedent and so inimical to circulation. Every householder ought at least to read HOUSTON'S repeated declaration that drinking water should be obtained direct from the rising main and not after a more or less protracted sojourn in a tank in the roof. And he should see that he gets it.

## A CONFERENCE ON DRUG STANDARDS.

THE first international conference on the standardisation of biological products, which was held at Edinburgh in July, 1923, under the auspices of the League of Nations Health Organisation, adopted a programme of research into the best methods of testing various drugs and selected a certain number of laboratories in different countries where these methods could be investigated and the results compared. The National Institute for Medical Research of Great Britain was used as a clearing house for the investigation and correspondence this work entailed, and a second conference, under the presidency of Dr. H. H. DALE, of the Institute, has just been held at Geneva to review the work of the past two years. The main subject of discussion was the standardisation of such products as pituitary and thyroid extracts, insulin, digitalis, salvarsan, and ergot, and the conference attained in the end a remarkable degree of unanimity. For digitalis, pituitary extract, insulin, and salvarsan a system of international standards was agreed upon; the iodine content was considered sufficient index of efficacy in thyroid extract, and the questions of ergot, extract of male fern and other vermifuges, and the vitamin-content of cod-liver oil, were held over for further investigation. The article by Prof. J. C. DRUMMOND, on p. 679 of our present issue, indicates the wide limits within which the vitamin-content of cod-liver oil may vary. It is probable that a separate specialist conference will investigate vitamin standards. The discrepancy which at present exists between one preparation of pituitary extract and another is shown by the fact that in one country, where control conditions are particularly good, a series of commercial preparations showed a range of activity of from 1 to 80. At the conference it was decided that the dry (acetone) extracted substance of the fresh posterior lobe of the pituitary recommended by Prof. C. VOEGTLIN to the Edinburgh conference should be adopted as standard. The Health Organisation of the League

will be responsible for the distribution of small quantities of this preparation which will form national standards; the physiological activity of ½ mg. of the above preparation is to constitute a unit of activity, and preparations should be labelled according to their potency. Insulin has from the first been relatively well standardised owing to the action of the Toronto committee who introduced it; but different workers have got optimal results with different methods, while variations in animal reaction and in climate have led to widespread discrepancy between units as determined in different countries. A dry, stable preparation of insulin hydrochloride, which has been made at the National Institute for Medical Research, London, has been accepted as the standard, and a unit of insulin, corresponding to that biologically measured by the Toronto committee, is now defined as the physiological activity of ⅛ mg. of the standard preparation. The international standard of digitalis is to be a dry powder of the leaves of *Digitalis purpurea*, similar to that proposed at the first conference. Experiment on cats is to define the activity, and further methods will be investigated; it is arranged that the standard shall be distributed internationally, and its activity will be annually controlled. The subject of salvarsan is of special interest, because the patents governing its production and that of its most important derivatives expire in the course of a few years, after which any factory in the world will be free to make them, and may flood the markets, legitimate and illegitimate, with products of widely varying toxicity. Standards for these substances are to be prepared and deposited in the original laboratory at Frankfurt, just as the standard samples of antitoxic sera are kept at the Copenhagen Serological Institute, those of pituitary extract at Washington, and those of insulin in the Hampstead Institute.

## THE LATE SIR FRANCIS DARWIN.

REFERRING in 1912 to "The Life and Letters of Charles Darwin," Sir Charles Sherrington remarked that "by the vivid presentation of the life, character, and work of one of the greatest naturalists the world has ever seen, by the modest self-effacement of its author, and by its literary charm, it has undoubtedly had a quickening influence on the advance of science in modern times." Sir Francis Darwin will perhaps be remembered best by this admirable biography of his father, with whose later work he was most intimately connected. Although he graduated in medicine while at St. George's Hospital, he never practised, but returned to his father's home at Down, where for eight years he acted as assistant and secretary. His name appeared on the title-page of Charles Darwin's "Power of Movement in Plants," and later at Cambridge he devoted much of his energy to research on the same subjects and provided a wealth of experimental evidence justifying the idea of the localisation of sense organs, which is now generally accepted. His interest in plant physiology did much to advance Cambridge in this study, and his teaching by lectures and text-book was most helpful to students; the "Elements of Botany," although written for the preliminary medical course, was a safe introduction to the study of plant life. As President of the British Association in 1908, he discussed the problems of stimulus and reaction in plants, and by the mnemic hypothesis—the idea that stimuli are not momentary in effect, but leave a trace or record—somewhat expanded, and also supported, his father's views on the origin of species. By his death science loses a considerable personality. His distinction did not clash with his sense of humour, his hatred of insincerity, nor his appreciation of the good work of others.

# Annotations.

"Ne quid nimis."

## THE SURGEON AS A TECHNICIAN.

UNDER the modest title "De Minimis" Mr. Arthur Edmunds calls attention, in a communication appearing in our present issue, to an aspect of surgery which has of late been seldom made a subject of prominence—namely, the technical details of the surgeon's art. Every surgeon has his own special methods by which in years of practice he has learnt to facilitate his work, but the great surgeons early in the last century took infinite pains to build these methods into a technique having a virtuosity comparable to that of the pianist, by which they triumphed over difficulties and astounded the onlookers. Those were the days when theatre galleries were crowded to see Fergusson amputate a hip in 12 seconds, or to watch the faultless perfection of an operation by Dupuytren or Syme. These men worked when anæsthesia was unknown and when the slightest clumsiness meant the prolongation of the agony of the patient, and it was not for mere spectacular effect that they spent, in acquiring supreme manipulative skill, so much labour as they did. When the enterprising young operators went over to Paris, where bodies were cheap and where perhaps for that very reason the surgeons led the world in technical brilliance, the aim to gain pace and precision was always humane in origin. One English surgeon, not even now an old man, went to Paris to tie the common iliac artery 19 times, so that he might learn to avoid wounding the peritoneum, naturally held in pre-Listerian days to constitute an almost fatal disaster. To-day the whole situation has changed. With the perfection of anæsthetics and of asepsis, the urgent necessity for such manipulative dexterity and speed has gone. The surgeon's work has been made so much easier in one sense—though so much harder when its range is remembered—that he is apt to forget that it really does matter how an operation is done; and authors have chronicled in our pages before now the details of surgical procedures where unimpeachable as the objects have been, the methods have had no reason for commendation. The results in such cases may have been generally good, or unfortunate issues may have not been traceable to faulty technique, for the human body is amazingly tolerant; but none the less the operation that is performed with an accurate knowledge of anatomy and a precise conception of the projected steps must remain the proper ideal. But there are difficulties in obtaining the experience thus necessitated. The old surgery consisted largely of amputations and of operations easily carried out on the cadaver. To-day the teachers cannot get the cadavers for the students, and if they could, they would be of little practical use for the carrying out of instruction in the operations on the viscera, which form now so large a bulk of surgery. It is only on living animals that the student could be taught real technique exactly, and such studies are most strictly prohibited in this country, where even the trained surgeon is not allowed to develop his skill in this way. In America, in some of the medical schools at any rate, regular animal hospitals have been organised, in which the student is taught the technique of his art. He is taught to operate upon anæsthetised animals, and to care for his animal patients. The modern surgeon is assisted by anæsthesia and asepsis, adjuvants of far-ranging power, and every day there are being placed in his hands some new products of mechanical or optical skill; but for the development of personal dexterity the medical curriculum makes little provision. Are the difficulties of filling this gap insuperable? The pessimistic view, that we have seen taken in more than one place, that the modern student, wearied with the burden of an overgrown curriculum, reaches the final examinations unable to outline the simplest amputation, and without ever having been taught how to hold a knife or

to tie a knot—this view is exaggerated, but there is no doubt that the importance of technique is no longer sufficiently insisted upon by teachers. Their responsibility here is difficult to discharge, and we may see the employment of elaborate dummies or models. Rightly used these could be of enormous service.

## NOTIFIABLE DISEASES THROUGHOUT THE WORLD.

THE second annual report on the prevalence of epidemic diseases prepared by the Service of Epidemiological Intelligence and Public Health Statistics of the Health Section of the Secretariat of the League of Nations[1] reviews the statistics for 1924 of the diseases notifiable in 29 European, 17 African, 20 American, and 16 Asiatic countries, together with Australasia. The tables collected in this volume are prepared from the current records published in the Monthly Epidemiological Reports of the League, and are sent to the National Health Services for verification. The short summaries of the movement of the various epidemic diseases during the year provide a review of the general situation. The incidence of plague has been higher than in any of the five preceding years, mainly on account of its prevalence in Northern India. On the other hand, Egypt, Iraq, and East Africa record fewer cases than in 1923. Cholera was rare outside India and entirely confined to Asia, except for nine cases in European Russia. In India it was more prevalent than in the two previous years. Yellow fever reappeared in Central America and 18 cases were reported from British West Africa. The incidence of typhus was lower in all parts than at any time since the war; it would seem that the great pandemic has now run its course. There was a serious epidemic of relapsing fever in Nigeria, but elsewhere the incidence diminished rapidly. Small-pox markedly increased in North Africa and North America, particularly among the natives. The fatality, however, was very low, only two deaths being reported from Africa. In South America there has been a definite decline of this disease. In Europe the situation has improved, although England and Poland report an increased incidence. Enteric fever remains as in previous years, except for a slight increase in Europe; the steady decline observed between 1894 and 1914 appears to have ceased for the time. Serious epidemics occurred in the Balkans. Malaria still constitutes a serious problem in Russia and the Balkan States. The Commission believes that the rise during recent years is due to climatic conditions favouring the spread of the mosquito; and to mass movements of peoples carrying with them new strains of plasmodia. Reliable information on Malta fever is only available for a few countries; it has been reported as far south as Southern Rhodesia and the Union of South Africa, as well as in the West Indies and United States. The great influenza pandemic of 1918–19 has been followed by recrudescences of varying intensity; the epidemic of 1924 was less severe than that of 1921-22, and was most marked in Western Europe. The incidence of encephalitis lethargica was lower in America and in Europe, with the exception of Great Britain, where it was unusually prevalent. In former years most cases occurred in winter, but in 1924 the majority were encountered during the spring. In spite of the serious epidemic in this country the death-rate was low, about 20 per cent., and abortive attacks were frequent. Japan suffered from an unidentified epidemic of the central nervous system, with a mortality of 55 per cent. A severe epidemic of acute poliomyelitis occurred in Iceland, with a mortality of 37 per cent. A large number of cases were recorded in Sweden and in England and New Zealand. Cerebro-spinal fever is notifiable in almost all parts of the world. A period of high prevalence followed the war, but since then there has been a decline. Several important outbreaks have occurred in the grass lands south of the North African desert belt. There seems to have been a slight but by no means general decline of measles during 1924, but, like scarlet fever, whooping-cough, and diphtheria, the disease is not completely reported, and definite conclusions cannot be drawn from the statistics collected here. The seasonal distribution of measles is seen to vary in different countries, and it tends to cause widespread epidemics periodically. The report is lavishly illustrated with maps and diagrams. The compilers admit that for several reasons it is not absolutely complete, but none the less it is an extremely valuable source of information for the student of epidemiology.

[1] Constable and Co., 10–12, Orange-street, London, W.C. 2.

## THE ROTUNDA HOSPITAL REPORT.

THE clinical report of the Rotunda Lying-in Hospital for the year 1923–24 appears in the August number of the *Irish Journal of Medicine*. As in previous years the report is full and comprehensive and includes a detailed statement made by the Master, Dr. Gibbon FitzGibbon, who summarises the year's work and discusses the various forms of treatment adopted. This summary should be read by all who are interested in midwifery, as it contains many original observations and gives an excellent idea of the work carried out at this well-known Dublin hospital. Attention is here called to a condition, arising wholly in primiparæ, "and described as persistent primary uterine inertia"; its pathology and the treatment adopted are reviewed, and notes appended of eight illustrative cases. In touching upon his method of inducing labour by a soft rubber tube, Dr. FitzGibbon takes exception to the description given of this method by Dr. T. Watts Eden,[1] who writes: "as much of the tube as possible is then gradually passed through the cervix. The excess should be cut off and the vagina packed to keep the tube in place." Dr. FitzGibbon affirms in the treatment of over 100 cases by this means he has never failed to pass the whole of the tube into the uterus. His object in devising the method was to have nothing passing from the uterine cavity into the vagina and to avoid having even iodoform gauze in the vagina to interfere with free drainage. Contrary to usual practice forceps are advocated in the report for the delivery of the breech, and the author considers them particularly suitable in the usual position of delay, at the perineum, more especially when the legs are extended, and greatly preferable in that position to any attempt to pass the hand up to flex the leg. During the year forceps were applied to the breech on five occasions with most satisfactory results. In discussing "contracted pelvis," it is stated that almost every primiparous patient is given a trial of labour up to rupture of the membranes before deciding on delivery by section. Internal pelvimetry was only done once in the year as dependence was placed far more upon the application of the head to the pelvic brim, as made out under anæsthesia, and by noting the progress of labour than on the actual dimensions of the pelvis. It is interesting to note that pubiotomy was only done in one instance. Cæsarean section, however, was performed on 19 occasions; there was no maternal mortality, but five cases were morbid and two infants died. The classical method was followed with the modification that the abdominal incision was begun below the umbilicus, the uterine incision being correspondingly low, generally encroaching for an inch or more on the lower uterine segment. During the year nine cases of eclampsia occurred; these were treated by the routine method of the hospital, morphia only being given if the patient was restless in labour or when returning to consciousness; the maternal mortality was nil but four infants were born dead. Of the 1703 cases confined within the hospital 102 were morbid according to the B.M.A. standard, giving a percentage morbidity of 5·9. There were ten maternal deaths, and 7·9 per cent. of the infants were either born dead or failed to survive the first week. Included amongst the maternal deaths were three cases of rupture of the uterus, one full-term

[1] THE LANCET Special Supplement, Modern Methods in Abnormal and Difficult Labour, No. 1, p. 26.

ectopic which died just after a laparotomy, and four cases of acute sepsis. There was also one case of concealed (and revealed) accidental hæmorrhage, associated with pre-eclamptic symptoms and marked albuminuria This case was treated on conservative lines. At the necropsy hæmorrhages were found under the peritoneum and broad ligaments and the whole of the uterine wall was infiltrated with extravasated blood. There were well-marked degenerative changes in both the liver and the kidneys. In the extern maternity 2001 patients were attended in their confinements, 210 of these being abortions or miscarriages under the twenty-eighth week. There were 11 maternal deaths, and 3·1 per cent. of the infants were either born dead or failed to survive the first week. Amongst the maternal deaths there was one case of post-partum hæmorrhage, one of rupture of the uterus, and one of placenta prævia. During this year 270 patients were admitted for antenatal investigation and treatment and 407 cases were received into the gynæcological wards. Of the latter 329 were operated upon with a mortality of less than 1 per cent. The last 20 pages of the report are allocated to an excellent set of tables giving a statistical synopsis of the various cases met with. Although this statistical enumeration is not as complete as certain of the tables given in some other maternity hospital reports, the deficiency is more than made good by Dr. FitzGibbon's very full opening summary. He and his colleagues at the Rotunda are to be congratulated on an excellent year's work.

## PLEURAL EMPYEMA.

THE threatened advent of an early winter, with its attendant visitation of pulmonary infections, brings the subject of empyema once more to a prominent position amongst the anxieties of our readers. So long as such epidemics persist this dangerous complication will continue to take its toll amongst patients who have successfully withstood the first shock of an attack of pneumonia. Difficulty of diagnosis is the factor which perhaps makes empyema most dangerous, and in this connexion the observations of a physician of long experience are always valuable. Such are to be found in an article recently published by Dr. F. J. O'Donnell,[1] who epitomises the experience of many years in an essay dealing with 20 recent cases of pleural empyema. Concerning the diagnosis the writer lays particular stress on four points: the persistence of marked debility, the early onset of facial pallor, an increase in the pulse-rate, and a demonstrable leucocytosis. Irregular pyrexia is almost invariably present, but Dr. O'Donnell finds this to be less constant than the increased frequency of the pulse, and it is worthy of note that fever occurring only for brief periods daily may far more easily escape observation than a rapid pulse, which can be detected at all hours. As to the physical signs, difficulty is experienced in probably the majority of all cases, for though a large collection of fluid at the base of one lung gives characteristic signs, the presence of a small collection of pus in an abnormal situation is not only confusing because of its position, but is often accompanied by the breath-sounds suggestive of consolidation of the lung. The rule adopted by Dr. O'Donnell is "to percuss the chest with a view to finding any area possessing the characteristic flat note suggestive of underlying fluid, and, if found, to explore that area regardless of the nature of the breath-sounds, if any, present there." "In doubtful cases," wrote Locke, "needle the chest early and often," and it may be said that one of the cardinal characteristics of the sound practitioner is that he does not allow the reluctance of the patient or his friends to deter him from insisting on the use of the exploring syringe in every uncertain case. Amongst the infrequent causes of difficulty in diagnosis are abscess of the lung and liver abscess rising to a high level; the discovery of pus in such conditions is still of great importance though the treatment is not necessarily the same. As to the treatment of pleural empyema, Dr. O'Donnell shares the caution of all experienced physicians and prefers to aspirate during the more acute phases of the disease, reserving resection for a later period. He finds that children withstand operation under local anæsthesia particularly well, and he urges the importance of open-air treatment in all severe cases during the period following drainage.

[1] Medical Press and Circular, August 19th.

## MEDICAL DEFENCE.

THERE are forms of insurance which hold out such compensations for misfortune as to make disasters almost desirable; there are others, of a negative sort, which offer as their greatest inducement the reflection that things might have been very much worse. Few people feel actual pleasure in paying rates towards the upkeep of the police force which, though it may save them from the worst features of burglary, is unlikely to distribute bonuses to its supporters; and the same reluctance is manifest in paying subscriptions to medical defence societies which are merely protective in function. The Council of the Medical Defence Union, which has just published its annual report,[1] welcomes 1118 recruits to its membership during the past year—the membership is now 12,617—but speaks regretfully of this reluctance of medical practitioners to avail themselves of its services. The Union can, however, find little else to deplore in its present position, for it was never so thriving before. Its amenities have also increased. Following the case of Harnett *v.* Bond and Adam, it has been decided to offer unlimited indemnity to members for any damages sustained in a case undertaken by the Union. The Union is enabled to propose these terms by an arrangement with an insurance company by which any excess charges over 25 per cent. of the Union's annual income are borne by the company. The premium for this indemnity insurance amounted to £3377 last year; but the assets of the Union are now nearly £19,000, and this sum is so large that from January next the Union will only insure for charges in excess of 50 per cent. of the income, and the premium will presumably be smaller. This unlimited protection of members in cases which the Union feels it right to take up is offered in return for the small subscription of £1 per year, although the cost of defence last year was in one case as much as £787. Ninety-seven cases were referred to the solicitors, and ten of these were withdrawn soon after the Union agreed to defend them. Only one case was lost and here the damages were greatly reduced. In seven the Union defended its members before the General Medical Council, and in none of these was a name removed from the Register; but the Union finds a difficulty in that the Council's methods are not in accordance with legal procedure. The Council, however, does not pretend to prosecute under criminal law; it tries to discover whether conduct imputed to a medical man infringes the standard which it is the duty of the Council to maintain for registered doctors. Among other matters to which the report draws attention are the services of the general secretary of the Union in adjusting difficulties between medical men; the danger of granting interviews to dissatisfied patients, who may afterwards misrepresent the conversations; the desirability of putting the cases before the Union before taking steps which it may be unable to authorise; the inadvisability of criticism by one doctor of another; and the unwisdom of settling disputes privately rather than facing publicity. It also mentions the fact that the Lunacy Laws only require the exercise in good faith of reasonable care, in contrast to Common Law, which insists in addition on reasonable skill. In the course of its report the Union discusses its relation to the British Medical Association's scheme of defence, and denies that the existing defence societies

[1] Report and Statement of Accounts of Medical Defence Union, Ltd. 1925.

"have been given every opportunity of entering into coöperation," although there have been suggestions that members of the Association should receive favourable terms from the societies. In his special report the Union's solicitor says: "The practice of the profession of medicine undoubtedly entails considerable risk of litigation, as in no other profession is the personal element so predominant and the expectation and ignorance of the public so profound." At a time when challenge of professional conduct is increasingly frequent personal insurance against such risks is practically indispensable, and a recent case has made it clear that in the opinion of the profession at large an unprotected colleague who suffers at the hands of the public has only himself to blame.

## FUNGI.

THE great division of flowerless and chlorophyll-free plants known as fungi represent a somewhat neglected source both of food and drugs, for in this country it has been estimated that there are at least 200 edible forms of fungi, and this is but a small proportion of the total species of these plants, of which there are over 5000 in Great Britain. Certain of the species represent a danger to our existing food-supply; the parasites on wheat and on potato plants have of recent years been the object of study by scientific agriculturists. The chief edible species is the mushroom proper, *Agaricus campestris*, and other fungi which are safe for eating purposes and not likely to be confused with poisonous varieties are the parasol mushroom, the inkcap, the beefsteak fungus, and the hedgehog mushroom. A fungus growing on the elder, *Fungus sambuci*, has been used as a local application in conjunctivitis; the puff-ball has a reputation in country districts for arresting hæmorrhage, and a 25 per cent. tincture is sometimes used as a nervous sedative; preparations from certain members of the species of *Polyporus* in the form of agaric acid and its derivatives are sometimes employed in the belief that they check profuse sweating; but ergot alone represents these plants in the Pharmacopœia. In ancient times the eating of fungi was a common practice. The Romans especially favoured the *boleti*, while Celsus has allusions to the use of certain edible varieties. Throughout Europe and in the East fungi are much more widely used as food than in Great Britain, and with the object of remedying this neglect Mrs. Grieve has produced a little book on "Fungi as Food and in Medicine" (price 1*s.* 6*d.* post free from the author, Whins' Cottage, Chalfont St. Peter, Bucks). She first deals with the methods of discriminating between edible and poisonous fungi, and it seems that certain of the traditional ideas with regard to "mushrooms" and "toadstools" are liable to lead to dangerous results, for it must be admitted that the average city dweller is very much at the mercy of vaguely remembered information, usually culled from the "odds and ends" column of some domestic journal. They do these things better in France, however, where the préfecture de police has established a centre of inspection for mushrooms at the "Halles" of Paris. Not only is every consignment of mushrooms entering this market inspected and passed before being put up for sale, but Parisians returning from an afternoon's excursion in the country may have their gatherings of fungi classified by the inspector free of charge. The British mushroom gatherer must acquire for himself a good working knowledge of the appearance of the edible varieties to be really safe, but generally speaking, fungi with evil smells or which turn a deep blue or greenish on being cut or bruised, or with a bitter taste, or which exude a milky juice should be avoided, and it is also important that fungi should be cooked and eaten while fresh. Mrs. Grieve goes on to describe the botanical features of the principal fungi, and follows her description of the plants with either a list of tasty recipes or poisonous symptoms according to their edible properties. The popular names of many of the fungi are in themselves attractive; "rough-legged boletus," "Jew's ear," "tinder bracket," "horn of plenty," are some examples, while among the recipes "procera pie" and "deliciosus pie" (from the "milky orange mushroom") look as if they deserved greater popularity. Truffles are more used in France and Italy than in this country mainly because the French truffle has a superior flavour to that of the English variety, and those sold over here being mostly imported and far from fresh give only a faint idea of the true truffle flavour. The fungus season begins at the end of April with the appearance of St. George's mushroom, and throughout the year until the end of October various varieties may be gathered. A most useful addition to our food resources in this country seems to be almost entirely neglected, and medicinal properties attributed by tradition to certain species of fungi may possibly represent an untapped source of therapeutic virtue.

## PNEUMOCOCCUS IMMUNITY.

RESEARCH on pneumonia, which has been so well carried out by American workers during the last few years, has recently been advanced a further stage by the publication of a monograph on pneumococcus immunity [1] by R. L. Cecil, G. I. Steffen, H. S. Baldwin, and Dorothy R. Rhoades. The first part of the report consists of experiments by Dr. Cecil and Dr. Steffen with a view to producing active immunisation of monkeys against pneumococcal pneumonia. Intratracheal injections of monkeys with three doses of pneumococcus vaccine rendered the animals immune, in the majority of cases, to subsequent injection with pneumococci of homologous type, but administration of the vaccine by means of a spray did not produce so satisfactory a resistance. Little or no protective substance against the pneumococcus could be detected in the blood serum of the animals vaccinated by intratracheal injection, the immunity apparently being rather cellular than humoral. Experiments were also made by the same authors to demonstrate the effect of treatment of experimental pneumonia in monkeys with pneumococcus antibody solution prepared by the method of Huntoon. This antibody solution proved to be effective when used as a curative agent intravenously in monkeys injected with Type I. pneumococcus, less so with Type II., and ineffective with Type III., and with the one strain of Group IV. tested. Pneumoccocus antibody solution was also effective in the treatment of Type I. pneumonia when injected subcutaneously. The report further contains a record of some investigations made by Dr. Rhoades on the fate of pneumococcus protective bodies when injected into normal animals and man. For this purpose two methods of obtaining the protective substance were employed—viz., Huntoon's and Felton's—both of which consist in separating out the globulin fraction from antipneumococcus serum. When solutions of this antibody are injected intravenously into the normal rabbit or man, protective substances against Type I. pneumococcus are demonstrable in the peripheral blood immediately after the injection and for a short period following; when animals were injected intraperitoneally, similar results were obtained, but when the subcutaneous route was used the appearance of protective substance was more variable. No protective substances could be elicited by the administration of these antibody solutions by trachea, mouth, or rectum. Finally, Dr. Baldwin and Dr. Rhoades report on bacteriæmia in pneumonia and its relation to the crisis. One hundred and seven cases were investigated from the wards of Bellevue Hospital, New York. The tabulated results show that with all types of pneumococcus the death-rate is much higher in cases with positive blood cultures than in cases with sterile blood. They find that pneumococci and protective antibodies rarely appear simultaneously

[1] Studies on Pneumococcus Immunity, IV. to VII., Bulletin No. 141, Hygienic Laboratory, Treasury Department, United States Public Health Service, Washington, 1925.

in peripheral blood. The same workers record work done on the use of ethylhydrocuprein in lobar pneumonia. They write guardedly of their results, but consider that there is some evidence of bactericidal effect.

## TUBERCULOSIS IN THE ITALIAN NAVY.

Surgeon-General Filippo Rho, formerly Medical Director-General of the Italian Navy, and a leading authority on naval hygiene, discusses, in a paper reproduced in the *Military Surgeon* for July, the question of tuberculosis in the Italian Navy, in which service there are always more cases than in the Italian Army, the experience here being also that of France. In Surgeon-General Rho's view the chief factors accounting for the discrepancy are infection and healthy carriers, and neither predisposition nor the often-quoted hard work and exposure; while he is confirmed in this, his long-held opinion, by the experiences of the war, which did not increase the incidence of tubercle among the soldiers. For seven years he was medical officer to the Naval Academy at Leghorn and in that time saw only two cases. But in 1919 a case appeared, followed during the same year by six others, always in the same class and dormitory, though each was promptly isolated as it appeared. There must, he thinks, have been a healthy carrier, and we may suggest that an attendant was perhaps the peccant subject. Many appear to hold that the tuberculous are more likely to recover from consumption on board a ship than on shore, but this is a mistake, at any rate as regards men-of-war, as the Italian figures show. The morbidity from tubercle in 1893–97 in the Italian Army was 1·9, and in the Navy 2·6 per mille—surely called "percentages" in error. But the liability is not uniform for all men in the naval service. The liability of sailors, in 1893–97, was 1·6; that of writers, firemen, and attendants on the sick was between 3·2 and 3·5, or about twice as much. Small cubic space increases the incidence of tuberculosis, the narrow environment being more favourable for the growth of the tubercle bacillus. Surgeon-General Rho hopes much from the new copper compounds, double cyanides, which have shown good results in Japan and Italy, and not only against tubercle, but against leprosy, in the hands of Matta and Devoto, at Cagliari. His paper is worth close consideration.

## CHRONIC PEPTIC ULCER IN CHILDREN.

IN a recent thesis for the degree of Master of Science in Surgery at the University of Minnesota, Dr. Oscar S. Proctor[1] discusses the subject of chronic peptic ulcer in children with a review of the literature and a record of three hitherto unpublished cases observed at the Mayo Clinic. Study of the literature showed that there were only 19 undoubted cases and two which were questionable. The patients included in this series were aged 14 years and under. The cause of chronic peptic ulcer in children is probably the same as in the adult. Two-thirds of the recorded cases were in females. The situation of nearly all the gastric ulcers was on the lesser curvature at or near the pylorus as in the adult. Approximately one-third of the ulcers were associated with definite stenosis of the pylorus. There was no indication that any of the gastric ulcers became malignant during childhood. The onset may be sudden with hæmorrhage or perforation, but this is very exceptional, and there is usually a history of gastric disturbance extending over months or years. The symptoms may be mild and attract little attention, consisting in pallor, anorexia, loss of weight, and vague abdominal pain, but as a rule they are very definite and sometimes severe. Epigastric distress or pain of varying degree is present in practically all cases, lasting from a very short period to several hours. Nausea and vomiting are present in most cases. Constipation is the rule and is often obstinate. Retarded development is often apparent and may sometimes amount to complete cessation of growth. The figures are, of course, too small to draw exact deductions, but bleeding was present to some extent in about 40 per cent. of the cases. Perforation occurred in about 25 per cent. General peritonitis in such cases was almost always present, and the mortality has been about 50 per cent. As regards diagnosis, chronic or recurrent dyspepsia in a child should suggest the possibility of peptic ulcer, especially if the growth is retarded or if the child is under weight or pale. Hyperchlorhydria is usually absent; when present it may be helpful in diagnosis. Blood may be found in the gastric contents or in the stools, especially on repeated examination. X rays are of great assistance in diagnosis, as was exemplified in two of the writer's cases. Unless there are definite contra-indications such as marked pyloric stenosis, repeated hæmorrhage, or perforation, medical treatment should always have a thorough trial, and if it fails the simplest operations are best, such as pyloroplasty or gastro-enterostomy.

[1] Surgery, Gynecology, and Obstetrics, July, 1925.

## THE LATE DR. LOUIS STARR.

Dr. Louis Starr, who died recently at Dinard at the age of 76, was one of the best known authorities in the United States upon the diseases of children. Born in Philadelphia, he graduated at his native University in 1871, and in the famous American city he conducted for many years one of the largest practices in the world in pediatrics, writing also widely on his specialty as well as editing the works of others. Since his retirement from practice Dr. Starr has been living at Dinard, and some of our readers may have seen his delightful etchings illustrating scenes in the immediate neighbourhood, especially in Dinan. An old friend writes: "Dr. Louis Starr's health had for some years been precarious, and the loss in the war of his only son remained an abiding source of grief to him, although those who visited him at his beautiful villa will remember that no word of complaint either of his grief or of his physical pain ever passed his lips." We tender our sympathies to his widow and devoted companion.

WE regret to record the death of Dr. James William Russell, joint professor of medicine at Birmingham University, on Sept. 20th, after a short illness, in his sixty-third year.

THE King has granted a charter to the Medico-Psychological Association of Great Britain and Ireland, which will henceforth be entitled to the prefix "Royal."

THE annual meeting of the Fellows and Members of the Royal College of Surgeons of England, which takes place on Nov. 19th, will be an occasion of interest, as the Council of the College, we are informed, has decided to lay before the meeting the exact terms of the petition for a proposed new charter, an interesting point in which is the suggested admission of women Fellows on the same status as men Fellows.

THE University Court of St. Andrews University has appointed David Rutherford Dow, M.D., D.P.H. St. And., of Crail, Fife, to the Chair of Anatomy in University College, Dundee, rendered vacant by the retirement of Principal J. Y. Mackay. Since 1913 Prof. Dow has been lecturer in regional anatomy at the United College, St. Andrews, and assistant successively to Profs. J. Musgrove and D. Waterston. He has published several papers on research work in anatomy.

INFANT CARE.—A series of elementary lectures on infant care for creche nurses and probationers will be given by Dr. Stella Churchill at Carnegie House, 117, Piccadilly, W. 1, under the auspices of the National Association for the Prevention of Infant Mortality and the National Society of Day Nurseries, on Thursday evenings from Oct. 15th to Dec. 17th. Full particulars may be obtained from the secretaries of either of the above societies at Carnegie House.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CXL.—THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

### PART II.*—THE OPERATION AND ITS DANGERS.

THE surgeon who is practised in operating upon patients with Graves's disease can judge from his experience how much should be done at one operation in each individual case. The same surgeon will, in one case, simply ligature and divide an artery; in another he will remove one lobe and the isthmus; in a third he will remove one lobe, the isthmus, and from half to two-thirds of the second lobe. A surgeon who is not practised will begin by ligaturing one artery and dividing it. He will do this for several reasons. It tests the patient's reaction to operation by something smaller than the extirpation of a lobe, and the reaction is, to some extent, an unknown quantity in Graves's disease. It will also temporarily improve the patient's condition, so that a bigger operation can be undertaken later with more safety. An operator unpractised in these cases may kill a patient by mere length of time taken, together with the unavoidable handling and the hæmorrhage, if he attempts too much at the first operation. But no one should operate upon a case of Graves's disease at all unless he is prepared to do ultimately all that is necessary to cure the patient. To remove one lobe is comparatively easy. To slice through the second lobe may present many difficulties; but to do the former only and to leave the patient at that stage is to bring into disrepute the operation for the cure of exophthalmic goitre.[7]

*Steps of the Operation.*

The steps of the operation may be briefly recapitulated.[8] A "collar" incision is made following Kocher's plan. This incision is always adhered to no matter how large the goitre. The flaps, including the platysma, can be dissected up and down sufficiently to give good access, whether the lobe is approached subsequently through the mid-line, or by an oblique division of fascia in front of the sterno-mastoid. My own plan after the reflection of the flaps is to make a stab through the lower flap for subsequent insertion of a drainage-tube. The infrahyoid muscles and fascia are separated in the mid-line; if this is carried out from the larynx to the sternum the muscles can be retracted sufficiently for the enucleation of almost any lobe without lateral division of the muscles. Nevertheless, if the patient is very ill, or the lobe is big, division of these muscles will permit of enucleation with less manipulation. The superior vessels are clamped in two places and divided; these vessels should never be ligatured in continuity, for the upper pole is drawn down so far that any simple ligature may easily slip. Enucleation is carried out by peeling back the fascia from the lateral aspect of the lobe with plain forceps, while the lobe is gently rotated on its longitudinal axis towards the other side. It is wise to leave a thin shaving of thyroid overlying the region of the recurrent laryngeal nerve so that this may be protected. I believe that more damage is done by stretching the nerve in rough manipulation, or by infiltration following the damage to the surrounding structures, than by actual cutting it across or catching it in forceps. The latter may occur unless the surgeon keeps very accurately to the right plane, and unless hæmostasis is meticulously carried out as the operation progresses. The isthmus should be removed with the first lobe unless the patient is too ill, as this facilitates the second operation. Otherwise the isthmus becomes buried in scar tissue, and its subsequent removal is accompanied by much bleeding and consequent blurring of the field. On the other hand, if it is left at the first operation, and not completely removed at the second, so much of the gland remains that the patient does not receive the maximum benefit from the operation.

The second lobe will probably be dealt with some months later. The original incision is opened, the flaps are reflected as before, but the vertical incision through the deep fascia and infrahyoid muscles will be made laterally, and not in the mid-line, in order to approach the lobe at a place free from the scar tissue of the first operation. The whole field must be clearly defined before the lobe is cut into. Enucleation will be commenced at the lower pole for several reasons; it is the larger pole and it is easily rotated forward on its attachment to the trachea by the scar tissue of the previous operation. Therefore its resection can be commenced by cutting into it from behind, and a large part of the lobe removed while the upper pole with its blood-supply is undisturbed. The procedure is as follows: a row of pressure forceps are placed on the capsule of the lobe, the lower ones being behind the lower pole, the remainder in a line approaching the lateral surface in front of the region of the recurrent laryngeal nerve and gradually coming forward on to the anterior surface as the upper pole is approached. These forceps grip vessels and arteries in the capsule and act as guy-ropes, so that the bleeding from the cut surface is under control until it is dealt with. Hæmostasis must be absolutely complete, and I believe that fine silk (or thread) is the only safe ligature for this reason—catgut loosens too readily through movements of the larynx and trachea in swallowing or coughing, and late hæmorrhage is a very serious matter.

Drainage at both operations is provided for by a split drainage-tube passed through the stab down to the bed of the thyroid. The infrahyoid muscles and fascia are brought together above this, the flaps of the collar incision are united by buried catgut sutures, which pick up the platysma, and the skin is closed by interrupted horse-hair sutures. These sutures and tube are removed in 48 hours, the flaps being held in position by the deep catgut sutures.

*Dangers.*

There are dangers peculiar to operation on patients suffering from this disease, and these must be given due consideration. In the first place, the selection of the case is important. Patients are not operated upon unless they are ill enough to warrant it; on the other hand, some are too ill. To operate upon a patient with increasing pulse-rate, high basal metabolic rate, mental agitation and emaciation is to invite disaster, and yet patients and friends, when they realise that ground is being lost, will often plead for operation.

Anæsthesia has some dangers. The heart is already suffering from intoxication, so that its margin of safety is a narrow one. Chloroform is absolutely contra-indicated. A skilled anæsthetist may give it with comparative safety, but many lives have undoubtedly been lost through it. If the surgeon has the complete confidence of the patient, local anæsthesia, preceded by omnopon ½ gr. and scopolamine 1/150 gr., is ideal; but to an anxious patient general anæsthesia should be given. I prefer ether administered by an endotracheal tube, but the method may be left to a capable anæsthetist who appreciates the conditions, and can manage his apparatus so that it does not hamper the surgeon. Ether should be preceded by a hypodermic injection of atropine to lessen secretion. Waiting in the anæsthetic room should be avoided.

While there should be no undue haste, a prolonged operation and the hæmorrhage associated with it definitely increases the risk. As Sir Berkeley Moynihan has so aptly pointed out in reference to gastric surgery, speed should be attained not through hurry, but through the precision which comes with practice.

* Part I. appeared in this series in THE LANCET last week.

[7] Dunhill, T. P.: THE LANCET, 1917, ii., 883.

[8] Same author: Brit. Jour. Surg., 1919, vii., No. 26, p. 195.

Two dangers associated with technique are injury to one or both recurrent laryngeal nerves, and to the parathyroid glands. The former of these is much more common than is usually recognised. If one alone is injured functional recovery of voice is good. If there is delay in this it has been demonstrated that re-educational methods rapidly improve the patients' comfort (Cortlandt MacMahon). If both nerves are injured the last state of the patient is worse than the first.

A danger not sufficiently recognised is that of slow hæmorrhage occurring beneath the deep fascia and the infrahyoid muscles after the patient has returned to bed. This may happen either through incomplete hæmostasis during the operation or afterwards through movements of the larynx and trachea in coughing or vomiting, which may dislodge one of the numerous ligatures. The danger is not from loss of blood, but from increasing pressure on the trachea as the blood collects in the cavity between the vertebræ and deep fascia. The small drainage-tube soon becomes blocked with clot and fails to relieve the pressure.

*Results of Operation.*

The risks may appear to be so many that the practitioner may wonder if operation should be entertained. If the right time is chosen, due precautions observed, and the operation performed with precision, the results are striking, and the relief to the patient very great. There are those who believe that the signs of exophthalmic goitre are only the manifestation of general endocrine disturbance, but the result of the operation is so obvious that we are compelled to believe that whatever the primary cause of the disease may be the immediate seat of the evils which make the patient's life so unhappy is the disturbed thyroid gland. After operation the pulse-rate drops quickly, the skin becomes cool, the mental agitation subsides, there is always some recession of the eyeballs, and the feeling of strain at the back of the eyes disappears. If amenorrhœa has been present the periods become regular.

It is known that in the later stages of thyrotoxic disease, when cardiac compensation has been lost, auricular fibrillation not infrequently results. It has been shown recently that after a sufficient removal of pathological thyroid gland in this condition the auricular fibrillation disappears spontaneously and the heart rhythm becomes normal in many cases. In those patients in whom the pulse does not return to normal rhythm after partial thyroidectomy alone, it can be rendered normal by the administration of quinidine, and will, in most instances remain so; whereas without operation normal rhythm cannot be maintained by the use of quinidine alone.[9] [10]

T. P DUNHILL, C.M.G., M.D Melb.,
Assistant Director, Surgical Professorial Unit, and Assistant Surgeon to St. Bartholomew's Hospital.

[9] Fraser, Prof. F. R.: Quart. Jour. Med., 1924, No. 68, xvii.
[10] Dunhill, T. P.: Brit. Med. Jour., Oct. 4th, 1924.

A CONFERENCE ON LIBRARIES.—A conference is being held over the present week-end (Sept. 25th–28th) at Balliol College, Oxford, under the auspices of the Association of Special Libraries and Information Bureaux. The Association exists to facilitate the use and coördination of all sources of information for scientific, technical, commercial, and public purposes. Sessions will be devoted to the present position of the special library movement; to informational work in politics, business, science, engineering, transport, medicine, and patents; and to public and university libraries, &c. A large mass of printed information lies idle through lack of coördination, and this fact naturally makes many and varied bodies interested in the conference. A number of Government departments will be represented, and also learned societies, research associations, the political parties, and many other organisations. The Minister of Labour (Sir A. Steel-Maitland) is opening the proceedings, and a long list of speakers includes Sir Horace Plunkett, Prof. Gilbert Murray, Prof. A. F. Pollard, and Dr. Chalmers Mitchell. The address of the Association is 38, Bloomsbury-square, London, W.C. 1.

# Special Articles.

## AMERICAN HOSPITALS.

BY LIONEL G. PEARSON.
(*Adams, Holden & Pearson, Architects, Knightsbridge.*)

AMERICA is a good country to visit—people are extremely friendly, hospitable, and ready to show everything to the visitor from across the Atlantic, and anyone who wishes to study their buildings is sure of a very pleasant experience.

Of course the ground to be covered is immense, and the amount of hospital building so great that it is somewhat difficult to make a choice of what to see, especially as authorities have a way of differing as to the relative merits of various cities and buildings. New York City makes the best starting-point without any doubt, for though the Americans deny that it is a typically American city, the fact remains that the best examples of recent architecture are to be found there, whether it is a question of banks, railway depôts, hotels, apartment houses, or hospitals. The pace at which New York (or other cities to a lesser degree) is being rebuilt is astonishing, and it is this extraordinary building activity, the result of commercial prosperity, which makes America at the present moment the most exciting country in the world architecturally. After New York the big new cities of the Middle West probably contain the most interesting examples of recent buildings. California, which has developed on rather different lines from the rest of the country, was too far off to visit in the time at my disposal.

One of the first things that strikes a visitor from England is the importance of mechanical means of heating and ventilation in America. In summer the electric fans and cooled air, in winter the use of radiator and heated air, have had the result that even in hospitals the open window which we consider the first consideration of health is not quite so much the matter of course over there.

*The Pavilion Type Obsolete in America.*

In any case the pavilion type of hospital with the cross-ventilated ward of between 20 and 30 beds no longer meets present-day requirements in America. Even where the large wards exist, the tendency now is to divide these with glazed screens so that cases can be classified and segregated. The Vanderbilt University Hospital at Nashville, Tennessee, is typical of present-day requirements. (Fig. 1.) Here a ward unit of 30 beds is made up as follows: open ward of 16 beds divided into four cubicles of four beds each, and the remaining 14 beds into four-bed, two-bed, and single bedrooms. Dr. Winford Smith, of the Johns Hopkins Medical School, Baltimore, Maryland, who acted as consultant for this scheme, advocates the use of wards 40 ft. wide, so that the patients' beds may be at right angles to the window in order to avoid light in the patients' eyes, and this width also is useful in planning the lower floors for other departments.

*Provision of Private Rooms.*

There are, of course, hospitals such as the Henry Ford Hospital, Detroit, Michigan (400 beds) (Fig. 2), and the Fifth Avenue Hospital, New York City (420 beds) (Fig. 3)—the latter being probably the best planned and equipped city hospital in the world at the present time—which consist entirely of private rooms, but these are still the exceptions, and it is more usual for a hospital to erect a pavilion of private rooms for paying patients. A very good example of this is to be seen at Mount Sinai Hospital, New York City, which was erected under Dr. Goldwater's direction for 131 patients, and embodies most of the best ideas of the day in this class of building. The low pavilion type of ward building is also unsuited

to the city site where the majority of hospitals are of necessity located.

*Vertical Height in Relation to Concentration.*

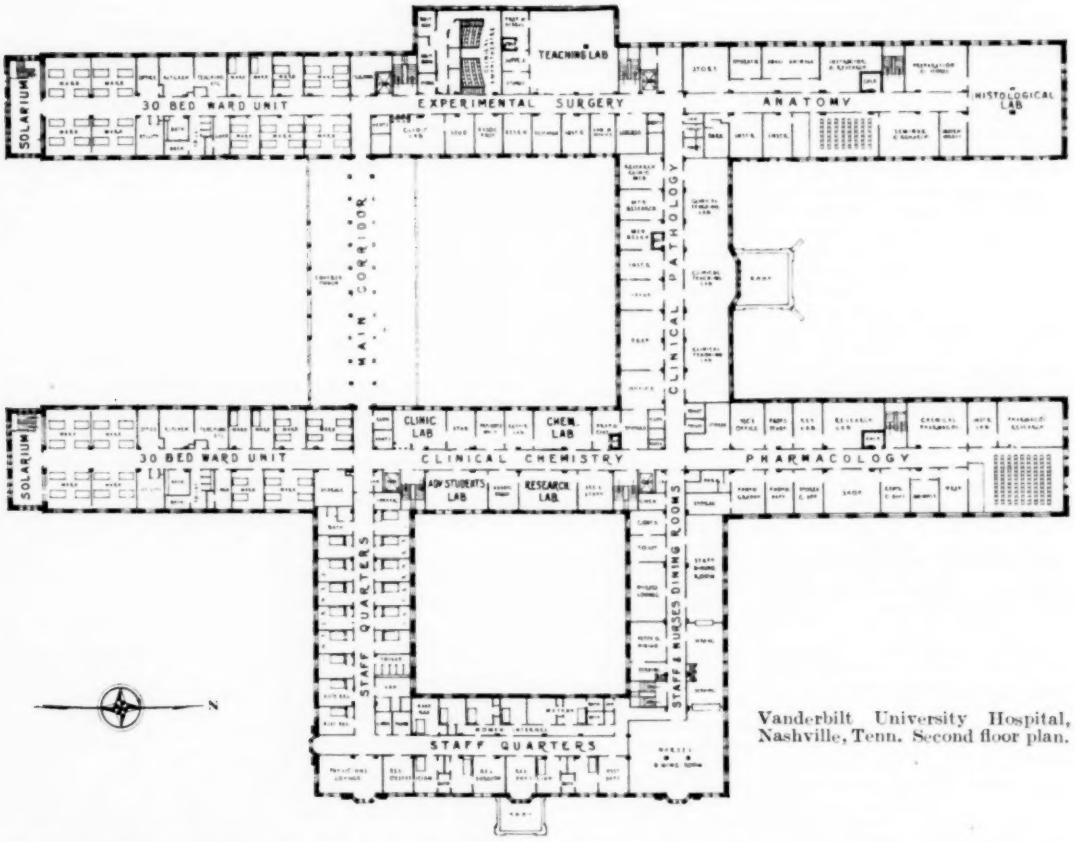
The new Columbia Presbyterian Hospital in New York City is to be 15 storeys. The Fifth Avenue Hospital, N.Y.C., is 10 storeys; St. Luke's Hospital, Chicago, 19 storeys; and even on a comparatively open site it is not uncommon to have a 6-storey building. This is not only a question of the value of the site, but also very much a question of service. The American believes very strongly in concentration, and vertical buildings are much more suitable to the elevators and shutes and all the mechanical equipment of the present day than the spread-out horizontal type of building where the staff must walk long distances, and the plumbing, heating, refrigerating, and drainage services must be less concentrated and efficient.

The elevator plays an important part in modern American life, and in hospitals, as in other buildings, the staircase is relegated to an inferior position and used mainly for fire-escape and floor-to-floor services. The elevators must, of course, be near the main entrance hall, which is generally made as attractive as possible architecturally, and follows the lines of the hotel as far as possible. This idea is also noticeable in the waiting-room, which is invariably comfortably furnished in the style of a hotel lounge, and the private room adjoining the superintendent's office, where financial matters may be discussed without disturbance. But perhaps the most characteristically American side of the administration is the record system to which a great deal of attention is directed. A large room near the entrance is usually assigned to this department, and in the out-patients' department of the Boston City Hospital there is a Lamson system of carriers for conveying the records to various departments, such as X ray, skin, &c., on different floors of the building.

*The Food Service.*

The food service is usually very efficient, and as great attention is paid to diet a portion of the main kitchen is frequently separated for this purpose under a special dietitian. In the case of the larger hospitals the food is conveyed from the kitchen (which is as near as possible to the elevators) to the diet kitchens on the ward floors in electrically-heated trucks, but in the smaller hospitals where the food trays are set up in the main kitchen, these are conveyed to the diet kitchens in dumb-waiters (small service lifts). The main kitchen is too often in the basement, and it is questionable whether this is good for the health of the staff, however perfect the mechanical ventilation may be. The kitchen at the Peter Bent Brigham Hospital, Boston, Mass., which is on the top floor, is a pleasant contrast in this respect. In this section it may be noted that the food is stored in refrigerators, and the same applies to kitchens on the ward floors. The nurses and staff dining-rooms are frequently arranged as a cafeteria (this is a popular form of self-service restaurant throughout the States), but it is doubtful whether the tired nurse altogether appreciates this system in spite of many advantages.

FIG. 1.



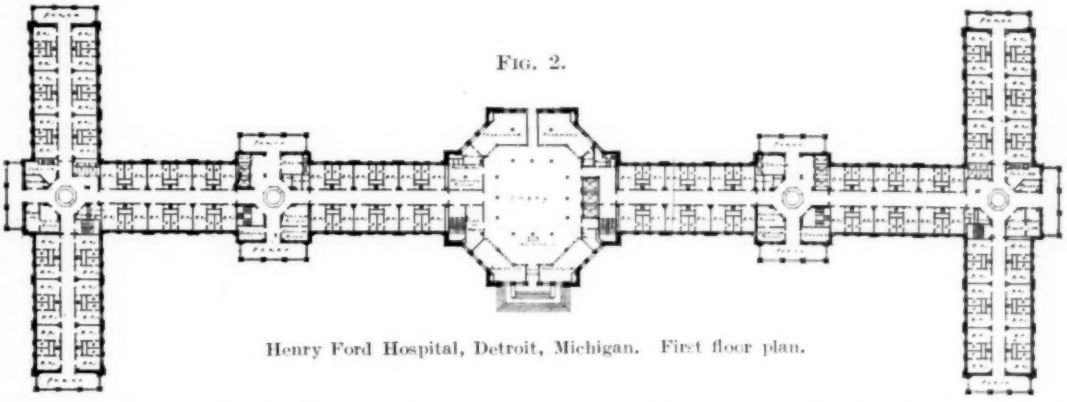

Vanderbilt University Hospital, Nashville, Tenn. Second floor plan.

*Labour-saving Arrangements.*

Laundry arrangements are, as one would expect, very up to date and efficient, and the system of dealing with linen and surgical dressings is thoroughly considered in the planning of the building. The linen shute is a feature of American hospitals, and consists of a circular glass-lined tube 2 ft. in diameter, with a port-hole opening on every floor and a flushing

ring at the top with drain connexion at the bottom. This is a labour-saving device much in use in hotels and private residences, but it has the objection that it may convey foul air from the disinfecting room at the bottom of the shute to the various floors. However, there is no doubt that as far as labour-saving devices are concerned, America leads the way, though one feels that in a hospital the health of the patient is even more important than the question of service economy. The system of "signal lights," by which patients summon the nurse at night and the doctor is "warned for duty," is another device without any drawbacks.

FIG. 2.

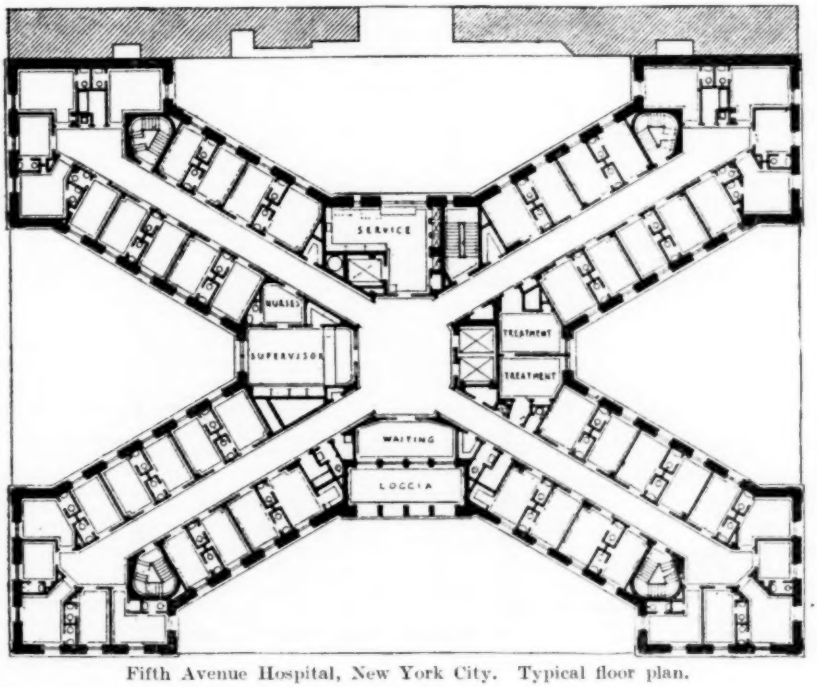


Henry Ford Hospital, Detroit, Michigan. First floor plan.

*Sanitary Arrangements.*

The sanitary arrangements are fundamentally different from those in this country. The chief cause of difference is that the soil and waste pipes, partly on account of the severe winters, are placed on the inside walls of all buildings, and it is not considered objectionable to open a toilet room direct off a bedroom and to rely on mechanical means of ventilation rather than a window direct to the open. This attitude to plumbing has profoundly influenced the planning of hospitals, where the sanitary tower with cross-ventilated lobby is almost unknown. In the case of the ordinary ward, the toilet and bathrooms open off the corridor leading to the ward, and the utility room (which contains the sinks, bed-pan steriliser, &c.) is also placed in a similar position. In the case of the private room, in some cases there is a separate toilet and bathroom to each room; in others the bathrooms are shared between two or more, but there is usually a lavatory basin (termed "running water") in every room and the w.c. is provided with a jet or special swivel tap, so that the bed-pan can be emptied without any travelling. As regards baths, Dr. Daugherty, of the Brooklyn Lewin Hospital, found these were unnecessary in his paying patients' block, as he only admitted acute cases.

FIG. 3.




Fifth Avenue Hospital, New York City. Typical floor plan.

Another fundamental difference between English and American plumbing is that in the latter case the pipes are not usually exposed on the surface of the wall or ceiling, but are "buried," in the case of the wall in a wide cavity, and in the case of the ceilings covered by a sub-ceiling. This results in a very smart appearance, especially in the case of operating theatres, and is undoubtedly excellent from the point of view of cleaning. But several medical superintendents spoke rather sadly of the results when a pipe burst, when the ceiling has to be "torn down," or the wall opened up at great expense, although this can be obviated to some extent by inspection openings at junctions, &c.

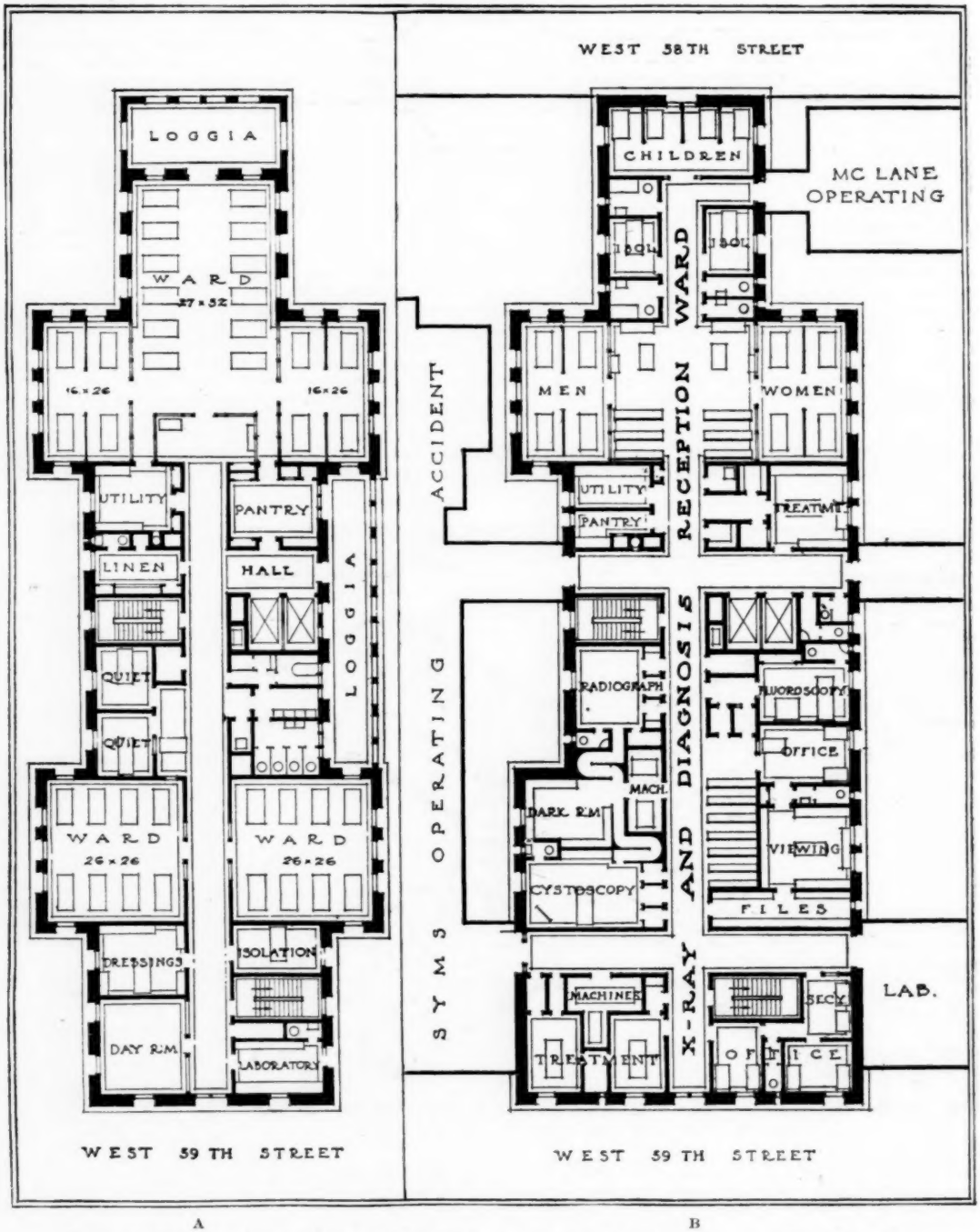
The nurses' station in the case of large wards overlooks the wards; in the case of private rooms is placed centrally either in the corridor or in a room divided from the corridor by a glazed screen. The provision of scrubbing rooms, flower rooms with sinks, a laboratory for routine work, and a comfortable waiting-room, is usual on every floor.

*Operating Theatre.*

The operating theatre suites are very much on the same lines as the English model. There is usually a sterilising room and a scrub-up room (with borrowed light) between two operating theatres, and the instrument cases are neatly arranged sunk into the wall flush. The floors and walls (up to door height) are now invariably covered with light grey or light green tiles, as this is considered more restful in the eyes of the operator; in one instance—at the Crile Hospital, Cleveland, Ohio—the floors and walls of the operating theatres are covered with rubber tiling, but this is not considered so sanitary as the tiling or terrazzo. The window is usually double up to transom level and the air between the two windows is warmed, so that there is no draught on to operating table.

There are various types of electric light in use, such as "Scanlan-Morris Noshadowite" (eight con-

FIG. 4.




A B

Roosevelt Hospital, New York City. New Pavilion. A, Plan of typical floor. B, Plan of first floor.

verging lights in a ring), "Frink Operating Table Reflector" (with automatic ventilation to counteract heat generated), and the "Operay-multibeam" (adjustable light with lenses and mirrors), but the "Portable Scialitique" seems the favourite at the moment. The American surgeon appears to have little use for natural light, and operations are usually performed by artificial light. Dr. John Clark, of Philadelphia, has arranged an operating theatre at the University Hospital with a falling shutter of the shop-front type, behind which the patient is prepared, while the operator can use the front of the shutter for slides and diagrams facing the students' seats—at the time of operation the shutter is, of course, raised.

*X Ray Departments.*

The increasing importance of X ray work is nowhere more fully recognised than in America, where the use of X ray for diagnosis has reached such a point that in one important hospital over 75 per cent. of the patients are now X rayed. The result is that there are now many well-planned and splendidly equipped X ray departments, and one of the best of these is to be found at the Roosevelt Hospital, New York City (Fig. 4), where the architects (Messrs. York and Sawyer, who also designed the Fifth Avenue Hospital and many other well-known public buildings) worked out a plan in conjunction with Dr. Steiner. The department is situated on the ground floor near the operating block, and conveniently placed for the out-patients, and consists of a radiographic room, dark room with special light-excluding pass-boxes of a revolving type, cystoscopic room, fluoroscopic room, viewing room, with an excellent set of viewing boxes made of enamelled steel and filled with Cooper-Hewitt lights, and a room for files. The treatment rooms are in a corner of the building cut off by corridors from the rest of the department, and special precautions are taken against rays, as the whole of the walls and ceilings are treble-lined with lead, wire-mesh, and finally glazed tiles, and the floor is lead and cork.

There is another very fine X ray department at the Boston City Hospital in the New Thorndike Memorial Building. This department is on two floors—on the ground floor are waiting-rooms, radiographic rooms, viewing room, and records; in the basement are the treatment rooms (with machines enclosed in a room 6 feet wide between two treatment rooms in every case), an exceptionally fine dark room with smaller rooms for wet plates, plate loading, &c. Special attention has been paid to the ventilation, an important point, unfortunately too often overlooked with resultant damage to the health of the assistants. There is a lecture hall at the end of the corridor two floors in height for the use of the department, so that altogether this is in many ways a model of what an X ray department should be. The colour of the walls found to be most satisfactory by the X ray men is orange or buff, and several departments have plastered walls coloured to these tints, and the floors are usually tiled like an operating theatre or covered with battleship linoleum with a border and skirting of terrazzo.

*Open-air Arrangements.*

The exposure of patients to fresh air and the sun's rays has affected the design of American hospitals considerably. The covered-in balcony at the south end of the ward block is still a favourite arrangement, as it is in England, but there is a development of this idea which is in many ways preferable, by the provision of a loggia in a central position, as in the Fifth Avenue Hospital, where it does not shut off any light or air from the patients' rooms, or more frequently by the use of a sun-room on the top of the hospital, furnished with easy chairs and with French windows opening on to a flat roof. In the case of private pavilions, a separate small balcony is quite often allowed to each room so that the patient's bed can be partly in the open air.

*American and English Hospitals Compared.*

In conclusion the question might be asked, "How do American hospitals compare with English?" and though differences of climate and custom account for many things that seem strange to us, the general impression remains that the ideals aimed at are the same in the two countries (the English hospital tradition must have had considerable influence over there), but that in some ways they have gone ahead of us. The love of system and business efficiency which is characteristic of the modern American business man (not necessarily of the Babbit type) has been applied to hospital planning with good results. The course of the patient from the time he enters the building to the time he leaves it (dead or alive) is traced just as Henry Ford traces his car production, and the same may be said of the food service, &c., and a considerable saving in running costs is effected in this way though, of course, this usually means increased capital outlay.

As to the tendency to rely more and more on mechanical contrivances there is certainly a reverse side to this, as Americans themselves realise in industry, for "the human touch," which is specially necessary in the treatment of disease, may suffer as a result. Perhaps it is lucky for us in some ways that our comparative lack of money makes us spend less on these things. Also we are more sceptical about new inventions, and not so eager to scrap old methods and adapt new ideas as the Americans. They take the risk as one of them once said to me, "of making great big mistakes sometimes."

The question of the paying patient (whose advent has resulted in the private room and individual sanitation) is partly an economical one, and we have not such a large class of comparatively well-to-do middle-class patients to draw on in this country. But in England, too, the future will see considerable developments in this direction, and in working out our own problems we can undoubtedly learn much from the study of the fine work carried out by the hospital committees, medical men, and architects in America.

## INDUSTRIAL HYGIENE.

### AMSTERDAM CONGRESS, SEPT. 6TH–13TH.

THE international congress held from Sept. 6th to 13th at Amsterdam and The Hague was the fourth concerned with industrial accidents and diseases. The permanent committee in recommending the series of meetings, the last of which was held at Rome in 1912, acted wisely, first in combining the two sections into one congress, and secondly, in selecting neutral, but central, territory for the representatives of nations to come together again. The countries sending official delegates were America, Australia, Austria, Belgium, Brazil, Britain, Bulgaria, Canada, Chili, Cuba, Czecho-Slovakia, Denmark, Finland, France, Germany, Holland, Hungary, Ireland, Italy, Japan, Norway, Poland, Spain, Sweden, South Africa, Switzerland, Roumania, Russia, and Turkey. The list is testimony to the spread of industrialism over the world with its post-war development in fresh centres.

Apart from official delegates many others were present whose reputations would alone have made the congress a notable gathering; among them may be mentioned Prof. B. Cuneo, France; Dr. Carozzi, International Labour Office, Geneva; Dr. L. Teleky, Vienna; Sir T. Oliver, Newcastle; Prof. F. H. Albee, U.S.A.; Prof. J. Glaister, Glasgow; Prof. L. Devoto, Italy; Dr. A. Trimble, Belfast; Prof. D. Koelsch, Germany; Mr. S. Alwyn Smith, Cardiff; Dr. W. Watkins-Pitchford, Johannesburg; Prof. E. L. Collis, University of Wales; and Prof. S. Kaplun, Russia. Great Britain was well represented, although the committee, under the presidency of Sir T. Oliver, which organised its membership and contributions had many difficulties to face and but few months to do its work; in this matter thanks are due to Dr. H. Menko, an able and indefatigable secretary, whose knowledge of Holland made him invaluable.

Holland is an entrancing and unique country to visit, which owes its very existence, lying below the sea-level, to the untiring activity of its population.

Its main industry, of course, is agriculture particularly applied to cattle and dairy produce, to market gardening and bulb-raising, but pottery is made at Delft, and diamonds are polished at Amsterdam, while Rotterdam possesses shipbuilding and docks second to none, and the Dutch glass industry flourishes. Hence those who attended the congress had opportunity of studying old problems in unfamiliar environment and of learning by inspection as well as by interchange of ideas.

The number and subject-matter of the papers contributed gave eloquent evidence of the scope of modern industrial hygiene. One criticism may be offered—the papers were too numerous and too diverse, and also too unequal in quality, to permit of adequate consideration and discussion. They numbered 147, and frequently time only allowed of their presentation at the meetings in the form of summaries too short to do them justice, particularly having regard to the diversity of languages employed.

Reference may be made to some of the more notable papers. Not the least interesting was an able résumé of the legal and ethical aspects of industrial insurance in Great Britain, prepared by Prof. Glaister, who, in concluding, stressed the need for compulsory medical examination when choosing a trade or profession—a subject which was further elaborated on the basis of German experience by Dr. W. Pryll. Dr. A. Kutschera pointed out the economic value of treatment of injuries; while Prof. Julliard summarised the different systems of dealing with financial claims for invalidity, whether by periodic payments, lump sums, or deferred claims. Sir T. Oliver in the address which we published last week related some recent achievements of industrial hygiene.

The treatment of accidental injuries, a matter of increasing importance to insurance companies, many of whom had sent their medical officers to the congress, was discussed from many aspects. Here Prof. Albee held his audience entranced with an exposition of bone-grafting by his new methods; Prof. L. Imbert made a valuable contribution on the treatment of fractures; Prof. Ch. Lenormant dealt with the treatment of wounds by suture; Dr. A. Oller described the Spanish institute where injured men are made fit to work again; Mr. Alwyn Smith pointed to the social and economic importance of dislocation of semilunar cartilages; Prof. Elsching handled the subject of industrial injuries to the eyes; and Mr. P. Mitchiner discussed injuries to the carpus and metacarpus and the value of stereoscopic X ray examination.

A link between accidents and diseases was provided by the relation between tuberculosis and occupational trauma which, Dr. F. Zollinger held, was difficult to prove satisfactorily, a view independently propounded by Prof. S. Diez, but Dr. Trimble produced evidence of a definite connexion. Closely associated in subject-matter were the papers by Prof. Collis summarising recent advances in knowledge on pneumonoconioses with special reference to silicosis, and by Prof. M. Sternburg on new views of this subject, and the less definite contribution by Prof. J. G. Sleeswijk. Other papers dealt with such occupational troubles as nystagmus, dermatoses, and tar cancer. The influence of overheated and damp atmospheres was dealt with from different viewpoints by Dr. C. S. Thomson and Dr. J. Torres Fraguas, which were reinforced by Dr. H. M. Vernon's evidence that invalidity increases as the mean temperature falls below or rises above an optimum of about 62° F.

The publication of the transactions in which these and the other papers will appear in full must be awaited before the full value to experts of the fruits of the congress can be appraised. But already the social success can be acclaimed. Throughout the week the hosts of the congress were perfect; their unstinted hospitality was notable, even for Holland; their tact, amounting almost to insistence, determined that national animosities should be suspended for one week at any rate, that national aloofness should be laid aside, and national friendships cemented. The cause of international meetings, as well as that of industrial hygiene, has thereby been placed deeply in debt to the Netherlands.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *The Irish Free State and the Medical Register.*

IT is understood that, owing to the absence on holidays of many members of the Medical Consultative Subcommittee, there has been no meeting of that body since its interview with President Cosgrave on Sept. 9th (THE LANCET, Sept. 19th, p. 621). Conversations will probably be resumed early in October, and an attempt will be made to draft a scheme satisfactory both to the Government and to the Medical Subcommittee. Last week Dr. F. C. Purser, President of the Irish Medical Association and a member of the subcommittee, made a report to the Council of the Association of the negotiations up to the present. The policy of the Association in regard to the Medical Register was laid down at the annual meeting held in June, 1924, when the hope was expressed "that no change will be made in the system of medical registration in the Irish Free State which would interfere with the right at present possessed by medical men qualified in Ireland to practise in Great Britain and the Dominions." The representatives of the Association—Dr. Purser and Senator W. O'Sullivan—were thanked for their services and requested by the Council to continue to work for the policy of the Association as laid down in the above resolution.

### *The Senate Elections.*

At the time of writing the count of first preferences in the Senate elections is not quite complete, though one can form, from the figures published, a fair estimate of the support given to the several candidates. It is expected that the quota for election will be about 15,000, and it is not likely that anyone will reach the quota on the first count. Of the medical candidates, so far, Mr. H. L. Barniville, an outgoing Senator, has done best, and of the others Sir Edward Coey Bigger has also done well. The remaining medical candidates appear in the following order, which may, however, be altered by further counts: Sir Arthur Chance, Mr. Denis Kennedy, Dr. A. MacBride, Dr. S. P. MacEnri, Prof. E. P. McLoughlin, Mr. P. McCartan. The medical candidates have been so far more fortunate than the legal. There were only two barristers among the candidates, and neither of them appears to have much likelihood of election.

MANCHESTER: POST-GRADUATE COURSES.—Post-graduate work, except for diplomas of public health and psychology, has not developed in recent years in Manchester. There is, perhaps, some feeling that a large influx of doctors from outside into the principal hospitals might damage the sound practical training which students receive. There have, however, been at several of the hospitals many courses of afternoon lectures open to and specially prepared for practitioners in the surrounding populous district. This year lectures are announced at Ancoats Hospital and at the Royal Infirmary. At Ancoats Hospital a series of lectures will be given by Mr. E. E. Hughes and Mr. Harry Platt on urinary symptoms and the treatment of fractures respectively. At the Infirmary members of the acting honorary staff take each one lecture on various subjects in turn, and there are also lectures by Dr. A. McDougall on epilepsy, Prof. W. L. Bragg on the nature of X rays, Prof. J. S. B. Stopford on the sympathetic nervous system, and by Sir William Milligan on foreign bodies in the food and air passages. This year the Lloyd Roberts Lecture will be given at St. Mary's Hospital, Whitworth-street, on Tuesday, Nov. 17th, by Dr. T. Watts Eden, on What We Can Do for the Unborn Child. This lecture is given at St. Mary's Hospital and at the Royal Infirmary alternately.

# Public Health Services.

## REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics of one English and two Scotch cities for 1924:—

| Name of city. | Estimated mid-year population. | Birth-rate. | Death-rates per 1000 of the population. | | | | Death-rates per 1000 births. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | All causes. | Tuberculosis. | Cancer. | Resp. Diseases with Influenza. | Neonatal mortality. | Infant mortality. | Maternity mort. from childbirth. |
| Sheffield .. .. | 525,000 | 18·5 | 11·6 | 1·02 | 1·24 | 2·4 | 44 | 90 | 4·5 |
| Edinburgh .. | 426,305 | 19·7 | 14·8 | 1·33 | 1·60 | 2·5 | 36 | 89 | 6·0 |
| Aberdeen .. .. | 160,387 | 21·4 | 14·4 | 1·33 | 1·43 | 2·3 | 40 | 122 | 5·5 |

*Sheffield.*

Dr. Fred. E. Wynne reports as the outstanding feature of the year a very serious outbreak of encephalitis lethargica, which began towards the end of the first quarter and continued throughout the year. The incidence of the disease was heavier in Sheffield than in any other town. There were 337 notifications, in which the diagnosis was confirmed, and 40 deaths. Fifty-eight per cent. of the notifications were males, 42 per cent. were females, and 56 per cent. were under the age of 21. The after-effects of the disease have in many cases been tragic, and these after-effects are at present being investigated by the newly formed Medical Advisory Committee. The formation of this committee, say Dr. Wynne, is an event of first-rate importance to the city, mobilising, as it does, all classes of medical workers for the study of modern problems in preventive medicine. The committee will issue a detailed report dealing with possible factors in the causation and spread of the disease, and with its clinical manifestations, pathology, and after-effects.

A table deals with the prevalence of tuberculosis in the 17 towns of England and Wales having populations over 200,000, and brings out the fact that the Sheffield death-rate, both from respiratory and other forms of tuberculosis, is less than that of any other of these towns, and, in addition, that the percentage reduction in the death-rate from tuberculosis, under both headings, during the past ten years is the highest—namely, 42·6 per cent. for all forms of tuberculosis and 40 per cent. for respiratory tuberculosis. As Dr. Wynne says, these results are particularly gratifying in view of the nature of the principal industries of Sheffield. He refers to the better conditions under which various classes of grinding and abrasive industries are now carried out, and to the detection and treatment of early cases under the Silicosis Regulations as important factors in the improvement, but states that the conditions under which much of this industrial work is done are still profoundly unsatisfactory. Properly organised factories are needed to replace the dark insanitary "wheels" still in use. The work of the tuberculosis dispensary, where an enormous number of suspects and contacts are examined and supervised, is cited as perhaps the most important factor in the decline of tuberculosis in Sheffield. The King Edward VII. Sanatorium for surgical tuberculosis with its out-patient department is also responsible for the saving of many young lives and the prevention of crippledom.

Dr. Wynne states that the hospital isolation of measles and whooping-cough is more urgent than that of scarlet fever and diphtheria. Most cases of scarlet fever could be successfully treated at home and the hospital beds allocated to this disease could be usefully devoted to measles and severe cases of whooping-cough. The death-rate from infantile diarrhœa is less than one-fifth of what it was ten years ago, and Dr. Wynne gives as the most important factors in bringing about this decline "the wide substitution of dried for so-called fresh, but highly contaminated, milk" and the educative work of the child welfare centre. He is definitely of the opinion that until methods in the milk industry have been revolutionised "liquid milk should be banished from the dietary of infants." A table is given showing that the mortality-rate at ages 1 to 5 has improved during the last 25 years just as much as the infant mortality-rate, thus disproving the suggestion that the result of the efforts made is merely to postpone the deaths of feeble and degenerate infants from the first year to a slightly later period.

Overcrowding in the city is still deplorable. The waiting-list for municipal houses became so hopelessly unwieldy that for a time it was closed. Last year 1042 new houses were certified, the largest number since 1921. The list has now been reopened, and about 4000 new applicants have been registered. Of the 1042 new houses certified 305 were erected by the corporation.

The veterinary staff found 23 cows with tuberculous udders during the year in the 2348 stalls used for milch cows within the city. As regards the country milk coming into the city by road and rail, 959 samples were examined for tuberculous infection and 72 gave a positive result. In following up these tuberculous milks 47 cows with tuberculous udders were discovered. At 29 of the country farms visited no tuberculous udders were found, but in most of these cases cows had been sold during the period between the taking of the sample and the date of inspection. The latter period was shortened in many instances when the microscopical examination of the milk gave a positive result. Thus 29 country cows were condemned on the microscopical examination of the milk alone. Of the 75 cows proved to have tuberculous udders 58 were slaughtered, but 17 were sold by the owners and lost sight of.

*Edinburgh.*

Dr. William Robertson points out that the figures of density-rates for particular areas will be altered by the improvement schemes which are in hand. This applies to the wards in Edinburgh and Leith respectively, in which the death-rates are highest—namely, St. Giles and North Leith. Infant mortality has always been highest in the wards where the density is greatest and the one- or two-roomed houses predominate. The future progress of these wards after the improvement schemes are completed will be watched with much interest, says Dr. Robertson. Four arc lamps have been installed at the hospital for the treatment of surgical tuberculosis, and mercury-vapour lamps have been provided for the use of the child welfare clinics. Dr. Robertson is convinced that there is a great future for artificial light treatment and proposes to ask the Health Committee to extend the employment of artificial sunlight to other institutions. He thinks it will be found especially useful for children convalescing from various infectious and non-infectious illnesses. Greater encouragement is now given to the treatment of scarlet fever in the home. The hospital report shows, however, that the type of scarlet fever has recently become more severe. Thus the hospital mortality-rate, which was 1·9 per cent. in 1922, increased to 5·2 per cent. in 1923, and was 4·2 per cent. in 1924. Among the complications occurring there was an unexpectedly fatal type of nephritis. Edinburgh was the first town in this country to attempt the immunisation of school-children from diphtheria on a large scale. Twenty-six schools were taken in hand and 3507 children immunised without a single untoward event being recorded. The scheme is to be extended to the pre-school age, the period when the incidence of diphtheria is greatest. Measles and whooping-cough became epidemic in the later months of the

year. Two fever-trained nurses were appointed to visit the homes and a large number of beds at Colinton Hospital were set aside for the reception of the more serious cases as well as of cases where the home circumstances were unsatisfactory. The tuberculosis death-rate showed a slight increase in 1924, and Dr. Robertson draws attention to the need for education in personal hygiene. For example, the citizens must be taught to appreciate that it is not so much the amount of food, but the correct selection and cooking of food that counts in building up and maintaining the body in good health and repair.

The report on the venereal diseases scheme shows that there is a progressive decrease in the percentage of patients who fail to complete their treatment. Thus in 1920 the percentage of defaulters was 40, in 1921 26, in 1922 it was 18·5, in 1923 15·6, and in 1924 11·9. Dr. David Lees, the V.D. medical officer, points out that this comparatively low percentage of 11·9 represents in the Edinburgh scheme a total of over 800 patients. The standard of cure adopted is high and many of these patients may be free from disease, but there are others who undoubtedly still have communicable disease and the problem involved requires careful consideration. Dr. Lees reports that the experiment of treating married women and children without specifically labelling them has been an unqualified success. Under this scheme 146 patients received in-patient treatment and subsequently put in 1452 attendances as out-patients. The percentage of those who failed to continue treatment was only 2, and more beds need to be allocated to this type of work. One of the drawbacks to the Edinburgh scheme is the lack of a hostel for unmarried girls who have contracted disease and lost their situations. The need for a V.D. centre in Leith has been recognised for long, but the Leith Hospital could not provide the accommodation required. Suitable premises have now been purchased quite close to the docks and the new clinic will be at work during 1925.

Dr. Robertson draws attention to the disparity between the rents at present paid by the slum-dwellers and the rentals of the cheapest of the new houses. Thus in the St. Giles Ward there are 1706 houses let at rentals of £5 to £10 per annum, while the cheapest of the new houses are rented at £12 and £15. Dr. Robertson goes on to bemoan the difficulty in convincing "many people who live in slums that a £15 house provided with such conveniences as electric light, gas boiler, hot-water system, washhouse, tub and sink, coal-cellar, drying green, and open air all round is in every possible direction worth £5 more than the dungeon-like slum devoid of almost every comfort that a human habitation should possess." There is a lack of skilled tradesmen in Edinburgh and houses have been kept waiting for plasterers. Dr. Robertson would like to see a chance given to mass production, and says, "there is surely much to be said in favour of a type of house that can be erected and made ready for habitation in six weeks time."

Progress has been made towards a cleaner milk-supply and a clean milk competition has been held. The amounts of designated milks at present sold daily in the city are as follows: Certified, 185 gallons; Grade A (tuberculin tested), 83 gallons; pasteurised, 2181 gallons, making a total of 2449 gallons. The daily consumption of undesignated milk amounts to 20,255 gallons. The cow population of the city numbers 4430, and among these the veterinary staff found 23 tuberculous udders and four cows with advanced tuberculosis. Mr. A. Gofton, the chief veterinary inspector, draws attention to one of the difficulties experienced by the owners of tubercle-free herds. If such an owner makes a purchase from any but a certified herd, he has no assurance that a cow which passes the test will also pass a second test applied after an interval of several months. The explanation is that the purchased cow may have been exposed to infection immediately before purchase and is therefore harbouring infection, which is at too early a stage to cause a reaction to the first test, but has time to develop between the first and second test. Mr. Gofton advises that when such an owner cannot make his herd self-supporting by breeding, he should segregate all new purchases for two or three months and then re-test.

*Aberdeen.*

Dr. J. Parlane Kinloch explains that his 1924 report is of the nature of a five-yearly survey. The report is a document of 200 pages and deals at some length with the methods which the health department has found most useful in preventing and curing disease, and also with the impending expansion of the statutory health services. It is only possible to refer to a few of the interesting points raised in this lengthy report, which will no doubt be of great value to the members of the town council and of all the other statutory and voluntary bodies interested in the health of the city. Under the heading "typhoid fever," Dr. Kinloch tells us that Aberdeenshire experience during the past 30 years suggests that this is now almost entirely a food-borne disease, due to the infection of milk or other foods by typhoid carriers, and that diminution in the number of typhoid carriers, due to the absence of the epidemic form of the disease, explains the diminishing amount of milk infection. As regards puerperal fever, Dr. Kinloch thinks it is of the utmost importance that routine bacteriological examination of expectant mothers about the seventh month should be carried out, with a view to determining what proportion of them have streptococci in the urethra or cervix. Methods of disinfection are to be modified. More visits will be paid in the case of infectious diseases nursed at home to secure immediate disinfection of infected articles, and some of the routine terminal disinfections will be discontinued.

In previous annual reports it has been shown that the death-rate from cancer is higher in the three east coast towns, Edinburgh, Dundee, and Aberdeen, than in the three west coast towns, Glasgow, Paisley, and Greenock. Dr. Kinloch, however, shows that when correction is made for age and sex of the populations of these six towns the difference in the cancer death-rate straightway disappears. Aberdeen experience shows that diabetic patients receiving insulin treatment fail to benefit to anything like the full extent owing to lack of adequate supervision and control. The city council in April, 1924, decided to make insulin treatment available for necessitous cases, and Dr. Kinloch thinks that the small additional expenditure involved in establishing a diabetic clinic, in order to see that the insulin treatment gives the best possible results, would be well worth while. Two years ago a biochemist was appointed at the laboratory of the City Hospital, and, in view of the results obtained by the application of methods of nutritional science to the dieting of the sick and the well, Dr. Kinloch hopes that the contemplated development of a nutritional laboratory will not be unduly delayed.

Some measure of improvement in the deadlock with regard to housing has to be recorded, as the result of the decision of the town council to erect 300 three-roomed dwelling-houses on the Hilton estate. Dr. Kinloch urges the appointment of a town-planning committee. A town-planning scheme is called for by 1929 and the committee needs to get to work at once. In August, 1924, the council made a strong protest against the proposals in the Factories Bill, 1924, to remove the supervision of the sanitary condition of workshops from the sanitary authority to the Home Office, and urged the desirability, on the other hand, of transferring the sanitary supervision of factories from the Home Office to the sanitary authority. A considerable proportion of the report is taken up with the discussion of the joint hospital scheme and its relation to the University and to the municipal health services. Nearly every branch of the municipal health services is in need of extension and a capital expenditure of £227,000 is

foreshadowed. The annual payment for interest and sinking fund is estimated to be equivalent to a rate of 2*d.* in the £, and the increased maintenance expenditure is estimated as equal to a rate of 3*d.* in the £. In addition to this expenditure the voluntary hospital service needs extension. The Royal Infirmary has 290 beds and is in a position to maintain them. An increase to 600 beds is said to be essential. It is thought that the required capital might be found, but that it would be difficult to obtain from voluntary sources sufficient money for the maintenance of 600 beds. The services of the municipal laboratory at present cover a wide ground, and Dr. Kinloch thinks it would be prejudicial to both parties if the University laboratories were to absorb the work of the municipal laboratory.

Dr. Kinloch is opposed to the farming out of municipal statutory services to voluntary bodies, and instances the inadequacy in Aberdeen of the schemes for dealing with venereal diseases and antenatal work. The existing state of knowledge with regard to light treatment is dealt with fully in the report, and Dr. Kinloch points out that even heliotherapy is possible in Aberdeen, with a fair degree of regularity, from the beginning of April to the end of October. The report concludes with coloured photographs of children receiving heliotherapy in Aberdeen on April 4th, 1925. The reasons for the excessive infant mortality-rate in Aberdeen are discussed and admitted to be somewhat obscure in the present state of knowledge.

## SCHOOL MEDICAL SERVICE.

THE following are some of the school health statistics for Cardiff, Hull, and Leeds for 1924:—

| Name of district. | No. on roll. | Av. elem. school attendance. | No. of routine children examined. | No. of special examinations and re-inspections. | Percentage of children found on routine examination requiring treatment.* |
|---|---|---|---|---|---|
| Cardiff .. .. | 36,365 | —† | 9,922 | 8,605 | 16·8 |
| Hull .. .. .. | —† | —† | 14,054 | 11,147 | 9·0 |
| Leeds .. .. | —† | —† | 19,309 | 53,996 | 30·1 |

* Excluding dental defects and uncleanliness.
† Not given.

*Cardiff.*

"The absolute limit of the capacity of the present staff and accommodation has been attained. . . . At the time of writing 622 cases are awaiting preliminary examination at the throat and nose clinic; 42 are awaiting operation for enlarged tonsils and adenoids; 237 are on the list for examination at the vision clinic; and 382 must take their turn for notice to attend the ordinary inspection and minor ailment clinic." So reports Dr. R. M. F. Picken, and nothing could further describe the inadequacy of provision for the school medical service. Only one dentist is employed in a vain endeavour to cope with a school population of 36,365. No provision as yet exists for physically defective children, though an orthopædic scheme has been approved by the board. Fifty-one partially blind and 27 partially deaf children are in attendance at ordinary elementary schools. No open-air schools are provided for delicate and pretuberculous children to the number of more than 200, and the provision for mental defectives is totally inadequate.

In a special report Dr. Picken outlines the minimum provision required to cope with school inspection, but states, "there is some concern at the expansion of this 'unremunerative department.'" On merely material grounds we think that "unremunerative" is entirely a misnomer. Many school medical officers have proved that inspection and early treatment of school-children directly pays for itself by increase of grant to the local authority, quite apart from the economic gain to the community, which should be apparent to any far-seeing authority.

Much good work has been done under great difficulties by Dr. Picken and his colleagues. Dr. H. L. Coulthard reports on the grave sequelæ of encephalitis in the few cases that have occurred in the district. He also points out how X ray treatment of ringworm has reduced the loss of school attendance from 98 days to 61 days on the average. On following up 237 cases of enlarged tonsils and adenoids, he finds that subsequent to operation there is marked relief from colds, sore-throats, earache, deafness, and otorrhœa, but that there is no evidence of increased innate intelligence apart from the increased vivacity and response due to improved health and hearing. In the course of the statutory school examinations for mental defectives, 77 were classed as mental defectives, 52 as imbeciles, and 18 as idiots; the proportion of imbeciles and idiots is so high as to suggest that the standard adopted is unusual.

*Hull.*

Dr. J. W. Fraser's report contains so much of special value that we are obliged to pass over the more ordinary topics to leave space for some unique features. There is in force at Hull the excellent and unusual practice of testing the vision and hearing of every child at the age of 6 years. The school for the physical defectives is conducted on somewhat exceptional but most beneficial lines, the objective being the care, and not only the safe-guarding, of those permanently crippled. Remedial treatment is given and 20 operations were performed there in the year. The orthopædic surgeon's report deals with the working of the school since its inception and deserves more extended notice. One of his conclusions is that if the children were brought early enough some types of defects would almost cease to exist. During the four and a half years that the school has been in operation 37 cases were discharged, and 70 per cent. of them are now practically fit. On this question of after-history Dr. Fraser gives authoritative statistics of those leaving the deaf and the mentally defective schools. Since 1914 32 children who have left the deaf school have been followed up, and 26 of them—i.e., over three-quarters of the whole number—are in some kind of work. Thirteen of these are earning between £1 and £2 a week, and only two are permanently unemployed. When we consider the useless and unhappy lot of the ordinary uneducated deaf person, this record is most significant and encouraging.

A similar careful account was kept of persons discharged from the mentally defective school in the ten years. Of 177 whose after-histories could be traced, 56 are in institutions, including 6 in Poor-law institutions; 60 are living at home without definite employment, but 33 of these are females, and are, no doubt, more or less engaged in housework; and 54 are in some kind of paid employment. Twenty-nine others are in precarious occupations, as, for instance, errand boys and newspaper boys, in which, however, many of them make a good sum weekly. A table gives details of the nature of the occupation and the wages earned. Dr. Fraser states that just over 10 per cent. of all discharged are earning over £1 a week. We can, perhaps, say that there are three groups: (1) Those in institutions or living uselessly at home. (2) Those who are following precarious or doubtful occupations. This would include the 29 boys selling newspapers, &c., some of the girls at home, and the persons earning less than 10*s.* a week. (3) Those who maintain themselves more or less satisfactorily. It is the second group who are difficult. The most economical alternative appears to be, to train them when older in institutions and then licence them out to work, as is done in the American system, or to transfer them to schools for older children where there is much manual training of vocational type. Subsequently they should be kept under strict supervision. In Hull "craft" classes for the dull and backward are successful and are being extended; we wonder

if somewhat similar training might be tried on the higher grade and older mentally defectives. Dr. Fraser concludes, after a special inquiry, that if a boy, on discharge from a mentally defective school, has an intelligence quotient of 50 per cent. or more, with an annual average gain of six months or more in mental age, and if his character is good and he has some manual ability, he will probably do well. There is much value in this kind of investigation. The whole report is evidence of the enthusiastic work carried out by the school medical officer and his colleagues, supported by an enlightened authority.

*Leeds.*

In his full report Dr. A. Wear draws attention to the great increase in attendance at the seven school clinics—viz., 32,399 more than last year, which makes a grand total of 214,902 attendances during the year under review. Ringworm of the head, while showing a diminution, is still very prevalent. Ionisation for discharging ears is still under trial at the public dispensary. Notice is drawn to such conditions as flat-foot, accompanying malnutrition. At present no payment is made to the local hospitals for the operative treatment of tonsils and adenoids, but it is hoped that this will be altered in the near future. The recommendations of the Board of Education and the Ministry of Health *re* school closure have been carried out, and Dr. Wear suggests that more parental care is necessary to reduce the amount of infectious sickness. "A case of scarlet fever should be looked upon as a source of danger for at least a fortnight after return from hospital or disinfection of the home, and the child should not be permitted to mix with other children until after plenty of exercise in the open air."

Sir G. Newman, in his last report, stated that the average number of dental fittings is about 75 for every 100 children treated. In Leeds the proportion is 72 for every 100, and Dr. Wear regrets that the parents do not take more advantage of the excellent facilities for dental treatment which exist in the city. The dental tables show the amount of work done among the elementary school population; 48,858 were examined by the dentists. 31,609 required treatment, and 13,792 actually received treatment. On the other hand, in the secondary schools 4276 children were examined, 2402 required treatment, and only 103 accepted treatment. Such figures as these raise the question whether secondary school-children are not sacrificed at the shrine of respectability to the detriment of their physical welfare. Adequate provision is made for day-school education of mental defectives, but considerable difficulty is experienced in placing children who require residential treatment. Dr. Wear believes that increased manual education will considerably help in the solution of the employment outlook of mental defectives—a view which is rapidly gaining ground generally—and few will disagree with him when he states that more manual work in the cripple school will improve the wasted muscles and the stiffened limbs. The popular desire for decent living conditions is shown by the granting of prizes by the *Yorkshire Evening Post* for "mother-craft," "care of the teeth," and for essays on the latter subject. Many hundreds of mothers and children in the district entered for these and much good has resulted both directly and indirectly.

At the camp school, financed by the Leeds Elementary Schools Athletic Association, over 1400 children spent an enjoyable and profitable week; but a week is all too short to obtain the full increase in physical and mental vigour which invariably results from such a change.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 12TH, 1925.

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 36; scarlet fever, 1510; diphtheria, 835; enteric fever, 106; pneumonia, 417; puerperal fever, 36; cerebro-spinal fever, 6; acute poliomyelitis, 19; acute polio-encephalitis, 2; encephalitis lethargica, 40; continued fever, 1; dysentery, 6; ophthalmia neonatorum, 114. There were no cases of cholera, plague, or typhus notified during the week.

*Deaths.*—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, 7 from measles, 3 from scarlet fever, 31 from whooping-cough, 11 from influenza, and 30 from diphtheria. There were 219 deaths of children under 2 years from diarrhœa and enteritis, as compared with 230, 218, 177, and 136 in the preceding weeks. In London itself the deaths from diarrhœa and enteritis in children under 2 years numbered 43, as compared with 38, 40, 28, and 20 in the preceding weeks; there were 8 deaths from diphtheria, 5 from whooping-cough, and 1 from influenza.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs.: A. I. Sheldon and J. P. Shorten to the *President*, for R.N. Medical Store Depôt, Deptford.

Surg.-Lt. (D) D. C. Lamond to be Surg.-Lt. Comdr. (D).

### ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. L. P. Spero to be Surg.-Lt.

Proby. Surg. Sub-Lt. A. T. G. Thomas to be Surg. Sub-Lt.

## ROYAL ARMY MEDICAL CORPS.

Capt. H. T. Findlay is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Pathology.

Capt. W. E. Tyndall is granted the temp. rank of Maj. whilst empld. as a Dep. Asst. Dir. of Pathology and Hygiene.

### ARMY RESERVE OF OFFICERS.

Capt. A. L. Taylor, from R.A.M.C., T.A. Res., to be Capt.

Capt. I. Aubrey, late R.A.M.C., Spec. Res., to be Lt.

### TERRITORIAL ARMY.

Maj. P. D. Warburton (Capt., Res. of Off.) resigns his commn. in the T.A.

## ROYAL AIR FORCE.

F. B. C. L. B. Crawford is granted a short service commission as a Flying Officer for three years on the active list.

Flight Lt. F. E. Johnson is promoted to the rank of Squadron Leader.

Flying Officer L. P. McCullagh is promoted to the rank of Flight Lt.

Flight Lt. J. S. Wilson is transferred to the Reserve Class D.2.

## INDIAN MEDICAL SERVICE.

Capts. J. Findlay, W. C. Spackman, N. M. Mehta, and C. H. P. Allen to be Majs.

Bhalchandra Kondopant Phatak and Gurbakhsh Dhamrait Rai to be Temp. Lts.

The King has approved the retirement of Col. F. L. Blenkinsop.

Lt.-Col. J. McPherson, civil surgeon, Peshawar, and Agency Surgeon in the Khyber, has been appointed Residency Surgeon, Mysore, vice Lt.-Col. R. Standage, proceeding on leave pending retirement. Lt.-Col. H. A. J. Gidney has resigned his seat on the Legislative Assembly. Lt.-Col. J. W. McCoy, civil surgeon, Lakhimpur, has been transferred to Sylhet. Maj. D. L. Graham, civil surgeon, Sadiya Frontier Tract, has been transferred to Sylhet. The following are granted leave: Capt. G. D. Malhoutra, Indian Station Hospital, Allahabad; Maj. A. C. Anderson, Jail Department, Madras; and Lt.-Col. R. P. Wilson, Officiating Surgeon-General with the Bengal Government.

### *The Future of the Service.*

With reference to the optimistic views which have appeared in THE LANCET with regard to the future of the I.M.S., it is interesting to note that only a few weeks ago the editorial columns of the *Pioneer*, which represents more or less the official view of Indian affairs, had the following remark: "Sir James Roberts, who had an exceptionally prosperous career in India, is strongly of opinion that the future of his old service, the I.M.S., is promising for Europeans. In a letter to the *Times*, indeed, he makes a general protest against ex-officials dissuading young Englishmen from entering the Indian Services, where, according to Sir James, 'a fine career awaits them.' As for the I.M.S., it provides 'just the life to suit an Englishman—responsibility, position, sport, and adventure.' The fact remains that there is no desire shown by young doctors at home to enter this fascinating service, while European members of the I.M.S. actually serving in India, so far from sharing Sir Robert's enthusiastic optimism, apparently consider that a service which has done magnificent work for the people of this country is doomed."

In a Royal Warrant recently signed it is laid down that in the interests of the Service an officer of the Indian Medical Service, holding the appointment of Director, I.M.S., in India, shall be placed on the retired list on attaining the

age of 60. This decision involves a reversion to an arrangement which was altered some time ago. On attaining the age of 57 a Major-General of the I.M.S. was compelled to retire by the change referred to, but now, when he becomes Director of Military Services, he will not be placed on the retired list until he reaches the age of 60.

The Government of Madras have approved of the proposal of the Principal of the School of Indian Medicine to give stipends to women students of the School. The stipends will be granted at the rate of Rs.20 per mensem, and the number of stipends awarded in one year will be subjected to a maximum of five. The stipendiaries will be supplied with books and instruments at the cost of the Government, and, on the completion of the course, they are liable to serve the Government, if required, for a period of not less than five years.

Sanction has been accorded, with approval of the Secretary of State, to the employment of six specialists in medicine with specialists pay at Rs.75 a month. Sanction has also been accorded to the employment of one additional specialist in surgery, and one specialist in electrical science, in the Waziristan district.

### TINNED FOOD IN THE BRITISH ARMY.

Recent Army Orders in reference to messing enjoin that all tins containing food must be thoroughly examined and none accepted which bears traces of rust round the joints or which is badly dented. Emphasis is laid on the fact that tinned salmon, herrings, potted meat, and fish-paste will quickly become unfit for consumption if left in the tins after they have been opened. It is also pointed out that the necessary ingredients for making fish-cakes and similar dishes should be prepared before the tins containing the fish are opened, and that these dishes, when prepared, should be cooked without delay.

# Correspondence.

"Audi alteram partem."

## THE CONTROL OF VENEREAL DISEASES.

*To the Editor of* THE LANCET.

SIR,—Some four years' experience in the industrial towns and county districts of Lanarkshire has convinced me that it is in our large cities that the solution of the venereal diseases problem must be found, and that the health of rural communities can best be protected by the effective control of these diseases in urban areas. On p. 43 of the Annual Report of the Scottish Board of Health for 1920 the following statement is to be found: "When in every district in the country a patient can secure treatment with reasonable convenience and due promptitude, the Board will be free to turn to . . . the problem of considering whether in the interests of the community it should not be made a matter of compulsion that persons contracting these diseases shall have recourse to treatment and shall continue in attendance for a period sufficient to ensure full results therefrom." To-day adequate facilities for treatment are provided. Is it not time that something more was done to stamp out venereal disease?

Treatment has done much, and venereal diseases are rightly believed to be diminishing; but those intimately connected with clinical work best know how unsatisfactory and inadequate is our control over them. The infected individual, the uninfected public, the qualified practitioner, the unqualified quack, and, last but not least, public health authorities—all these are playing a part in postponing the day of victory in the antivenereal campaign. Some infected persons never come for treatment at all because their symptoms are slight and tend to disappear spontaneously; others abandon treatment as soon as it has removed the obvious manifestations of the disease; few report early enough. All these classes of case are liable to pass on the disease to others, and interrogation reveals that the average male patient is even ignorant of the uses of the simplest prophylactic measures. These are some of the shortcomings of the patient himself; a further obstacle to his proper treatment is the unenlightened state of public opinion. Attendance at a clinic by venereal sufferers is a public duty designed to protect the health of the community, and the performance of this duty must be encouraged. There is something to be said for the idea of doing away altogether with the term "venereal," inventing some fresh name, proclaiming it as a deadly disease, and treating the victims as in-patients in isolation hospitals.

Gonorrhœa is still far too lightly regarded by many medical practitioners, who delay sending patients to a clinic until the ordinary palliatives (and provocatives) have failed, and, notwithstanding the Regulations of 1917, quack treatment of venereal disease has not been completely stamped out. There are some unscrupulous persons who are evading the law; and this reflection naturally leads to the fifth class of offender—those responsible for public health administration. Failure to prosecute the first detected case of unqualified treatment is short-sighted leniency, because by its very nature the offence is one which but seldom comes to light. Slackness in giving effect to the provisions of the Mental Deficiency Act of 1913 allows feeble-minded females to indulge in sexual promiscuity and to spread venereal disease. It is also regrettable that the civil authorities should tolerate without protest the discharge from the Navy of uncured cases of gonorrhœa, and condone the system which virtually makes the acquiring of gonorrhœa grounds for discharge from the Service. In our prisons, too, full advantage is not being taken of the opportunity to treat by modern methods prisoners with latent or active venereal infection.

The question of what further measures are needed to hasten the ebb of the tide of venereal disease seems to divide medical opinion. All are agreed on the desirability of raising the general standard of sex morals. For the rest, the hope of many seems to lie in further advertisement of the necessity for early treatment and of the provisions made therefor, in a higher standard of treatment of gonorrhœa, and in good advice given to patients at clinics regarding the prevention of marital and congenital infection. Short of applying legal compulsion to infected persons, is there anything further that might be done to prevent the spread of venereal disease? In some cases defaulting patients might be persuaded to resume treatment if visited in their homes by plain-clothes members of the sanitary staff; the prohibition of the sale by chemists of ad hoc preventive disinfectants might, with suitable safeguards, be removed; the sale of drugs or appliances of known or reputed value in treatment might well be prohibited except on qualified prescription, and more thorough supervision by local authorities of mentally defective girls and moral imbeciles, with routine examination for disease on admission to institutions, is urgently required. All these measures will doubtless tend to a slow reduction of venereal disease. But if gonorrhœa and syphilis are ever to cease to be endemic something more than our present methods is required. The essential problem is to get at a comparatively small number of infected men and women in our big cities who are responsible for keeping the disease going. Careless of everything they go on spreading the poison. How are they to be dealt with?

In Scotland opinion has got so far as discussing what form notification should take; but notification is relatively worthless by itself unless the onus of notifying is laid on the infected person and unless failure to undergo satisfactory treatment can be adequately penalised. Any attempt to punish those who discontinue treatment, without also penalising failure to report symptoms, would defeat the object we have in view. To compel infected persons to present themselves for treatment may be contrary to common law, but, if so, it is obvious that the law can be altered. So long as we go on dealing with only those who come voluntarily for treatment to our clinics, and so long as a big percentage of these patients leave off treatment while still potential sources of infection,

we are merely playing the part of public health quacks—treating the symptoms but neglecting the cause of what is both a social and a physical disorder. Clamant as are the calls for housing and economic improvements, and desirable as is the raising of the general standard of sex morals, it should be recognised that venereal disease need not remain with us until Utopia arrives. It is a question not of morals but of medicine. Disease is merely an unfortunate accidental accompaniment of venery, and such accidents will *not* happen in well-regulated communities. The problem of sexual immorality is not identical with that of venereal disease, and we must take the risk of making the world safe for profligacy. Venereal disease is the most easily preventable of all diseases, and it should not be beyond the power of medical science to stamp it out. The virus is short-lived outside the body; infection is possible only by close contact. Early thorough treatment prevents the disease being passed on to others. We have the knowledge; all that is required is the will and the courage to make practical use of that knowledge.

Let the transmission of venereal diseases be made an offence against the law of the land. Let each individual case of fresh infection be followed up ruthlessly and inquisitorially, with as much thoroughness and as much determination as is shown now in eradicating other and less harmful diseases. To do less is wicked wastefulness and cowardly procrastination.—I am, Sir, yours faithfully,

ROBERT FORGAN, M.D., D.P.H.,
Executive Medical Officer, Lanarkshire Joint V.D. Scheme.

Sept. 14th, 1925.

*** In Edinburgh the percentage of patients who fail to complete their treatment at V.D. centres fell from 40 in the year 1920 to 11·9 last year. Among certain classes of patients the leakage was very small indeed, as may be seen from the report on p. 670.—ED. L.

## RHEUMATIC INFECTION IN CHILDHOOD.

*To the Editor of* THE LANCET.

SIR,—In the investigation of the problem of rheumatism which is engaging so much attention at the present time there appears to be a danger lest the fundamental nature of the disease should become obscured. While the possible influence of some "germ" cannot be ignored, it is essential that there should be clear recognition of certain features of rheumatism in its broadest sense which are constant, easily detected, and very suggestive. Sufferers from rheumatic affections have a temperature that is normally subnormal, they have skins which are habitually inactive, and they are liable to short attacks of fever always accompanied by increase of pain and acid sweating. These attacks may be slight and overlooked, or they may present the classical symptoms of acute rheumatic fever. Rheumatic fever left to itself burns itself out in the course of a few weeks, the more severe the symptoms the sooner they disappear; though the illness leaves permanent heart-scarring it must be credited with a tendency to self-cure.

By physical measures this self-curative process may be stimulated and hastened. If artificial fever and sweating are induced there is a temporary increase in the severity of the symptoms quickly followed by rapidly progressive relief. That this view of rheumatism is not merely theoretical is abundantly proved by the results of treatment upon these lines; chorea, "rheumatic fever," subacute and chronic rheumatism in child and in adult yield to the application of moist warmth, and consequent pyrexia and sweating without the use of any drug. It would seem that the basic factors in rheumatism are an error of metabolism leading to the storage of lactic acid compounds in the tissues, and a failure of the skin to expel this poison except under the stimulus of fever.

This conception of the disease suggests that prevention is to be sought in measures that ensure healthy skin action and freedom from the depressing influence of cold, damp, and malnutrition. Other factors may play a part in some cases, but a study of the problems of prevention and cure that does not take into account the aberration of skin activity and lactic acid metabolism is likely to be sterile or misleading in its results. I am, Sir, yours faithfully,

C. E. SUNDELL.

Queen Anne-street, W., Sept. 21st, 1925.

*To the Editor of* THE LANCET.

SIR,—The meaning of "poverty" in the dictionary is given as want, necessity, defect, and its derivation is from the Latin pauper. Dr. R. Miller (THE LANCET, Sept. 19th, p. 626) applies this term to the working or artisan class, an indictment that calls for immediate action on the part of the community, if what Dr. Miller says is correct. What I tried to emphasise was that the majority of post-rheumatic and post-choreic heart cases are to be found in those who partake of neither of the great lime-bearing foods—milk and eggs—amongst the poor, because they cannot afford them, and amongst the well-to-do because of a great dislike to those foods.

I am, Sir, yours faithfully,

Swansea, Sept. 19th, 1925. G. ARBOUR STEPHENS.

## PERSISTENT DIARRHŒA IN PHTHISIS.

*To the Editor of* THE LANCET.

SIR,—One of the most serious complications of a pulmonary, peritoneal, or general tuberculosis is persistent diarrhœa. This enteritis is not necessarily tuberculous; it may be in part or altogether septic, but in any case it is a happening of evil omen. Fishberg speaks of that form of diarrhœa which comes on late in pulmonary tuberculosis as almost invariably fatal and rapidly fatal. It is peculiarly disappointing to the practitioner treating pulmonary tuberculosis by artificial pneumothorax, when this diarrhœa, at first casual, then frequent but intermittent, and finally persistent, attacks a patient whose lung has been collapsed, apparently to a stage of complete arrest. Then may come this sequela, a rapid extinction of vitality, and then death.

I have sometimes wondered whether artificial pneumothorax has, in one or two cases out of a large number, produced this diarrhœa; but I have then remembered that it is so common a sequel where no such treatment has been tried that I have not been able to see cause and effect in the chain of occurrences. Treatment may be successful in slight cases, but may utterly fail, and I think it generally does where the enteritis is of vast extent. A recent French remedy is salicylate of alumina. I have only tried it in very advanced cases, and I am not frowning on its use when I say that in these very advanced cases it has done no good. Acetate of lead and opium, and sulphate of copper and opium, and pulv. confect. arom. cum opio are all of value. Washing out the bowel with large enemata is advised by some, but may cause intense pain.

The remedy which I have found of the most value has been bismuth subcarb. in elephantine doses; I have given single doses of from ʒiv. to ʒii. (In giving such a dose of bismuth subcarb. it must be guaranteed practically free from arsenic.) I have found no remedy to equal this. One large dose taken in milk, the patient drinking it slowly and taking, perhaps, two hours in swallowing one dose, has often cut short an attack of this distressing diarrhœa. It cannot be repeated for three days, but other remedies, especially pulv. confect. arom. cum opio, can be continued. I have known this treatment to be of great benefit in persistent mucous colitis. It is hypothetically possible that such a large dose of bismuth may produce intestinal obstruction. I have met with no such result.

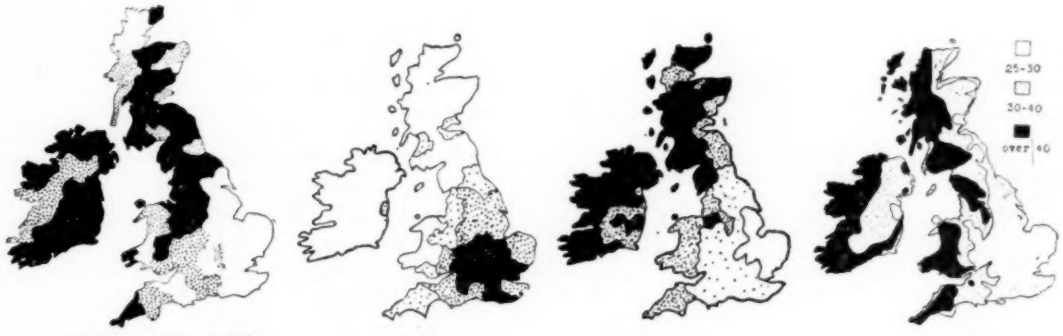
I am, Sir, yours faithfully,

Leeds, Sept. 21st, 1925. H. DE CARLE WOODCOCK.

## THE GEOGRAPHICAL DISTRIBUTION OF HEART DISEASE.

*To the Editor of* THE LANCET.

SIR,—The interesting map published in your last issue by Dr. Matthew Young recalls in a striking way the distribution in these islands of a number of other phenomena. I give as examples the yield of turnips per acre, the proportions of land occupied by cereal crops which are used for oats and wheat




respectively, the distribution of the snails *Hygromia fusca* and *Theba cantiana*, and of the pearl-mussel *Margaritana margaritifera*, and lastly, the rainfall, which, though a commonplace, is often overlooked. Historians also remark that in the Civil War the country to the south and east of a line from Hull to Gloucester and Plymouth was for Parliament, and that to the north and west for Charles. The distinction between north-western and south-eastern is evidently of wide and varied biological significance, and its explanation is probably discoverable by careful statistical analysis, such as Dr. Young's, though the pitfalls in correlating variables are sufficiently

Distribution of three molluscs: (1) *Hygromia fusca*; (2) *Theba cantiana*; (3) *Margaritana margaritifera*.

illustrated by the examples I have given; it is unlikely that the parasite which causes acute rheumatism lives in the turnip, or that there is an anti-rheumatic emanation from *T. cantiana*. Taken in a broad way it seems much more likely that the dominating factors are dryness and what we may call civilisation. The actual rainfall in the south-east is much less, the calcareous strata of which it is largely composed are more permeable, a more intensive and thorough agriculture helps to keep the surface dry, which is, indeed, the effect of many modern improvements like street paving and tarred roads; there is much evidence that the south and east of England has become progressively drier during the last 100 years. Associated with this dryness in many such ways is a different standard of living. When Cæsar came to Britain he found culture at its highest level in the south-east, and, excepting, of course, Manchester, the same remains roughly true to-day; it may be because the south-east is nearer the Continent, or because its sunshine is more cheering than the rain of the north-west, or because, for a variety of reasons, it is more prosperous. But it is only necessary to travel across England from west to east, say from Hereford to London, and look out of the railway carriage window to appreciate that the conditions of life are not the same, and it is not difficult to believe that ugly (but waterproof) modern cottages and well-tilled clean fields may be better for the health of the inhabitants if they leave little "real country" for holiday-makers. These very brief indications show the inter-related complexity of the subject. Temperature seems to have relatively little influence; in winter the country is progressively cooler from west to east, and in summer from south to north, and there is no period at which the distribution of temperature corresponds for any length of time to the biological divisions.

I am, Sir, yours faithfully,

Radlett, Herts, Sept. 19th, 1925. A. E. BOYCOTT.

---

## "SMALARINA" IN MALARIA.

*To the Editor of* THE LANCET.

SIR,—In your issue of June 27th I read a brief clinical report by Dr. G. C. Low and Dr. A. L. Gregg on my method of malaria therapy with smalarina. There are, however, some slight mistakes in that note in connexion with the practical application of this method as reported, and these I should like to discuss. Dr. Low and Dr. Gregg, when treating their patients, had probably not read my papers and pamphlets or had forgotten the rules I suggested for carrying out the treatment. From their report I gather that:—

1. The patients, when the smalarina treatment was started, were feverish, that is, in an acute stage or in a state of relapse.

2. Smalarina was administered in order that the fever might abate at a fixed time.

3. Since the fever did not abate, quinine was given, and in a (relatively) short time this treatment established a rapid convalescence with the disappearance of the parasites from the peripheral blood-stream, of fever, and of splenic enlargement. These fortunate results were attributed to the administration of a few doses of quinine.

It is to be noted that no treatment with quinine alone was carried out as a control.

The points I wish to raise in regard to the above results are as follows:—

1. In all my publications I have clearly maintained that the new therapy is a "biological therapy," that is, it produces an organic reaction and immunity, and is by no means a pharmaceutical, symptomatic, febrifuge treatment. Quinine will suffice to fight the fever.

2. So far as smalarina treatment is concerned, it must be remembered that it is not suited for the acute stages of malaria because there the administration of quinine is necessary to reduce the fever. Smalarina tends to provoke an immunity against malaria.

3. The therapeutic action of smalarina manifests itself sometimes a little late. This action appears very often associated with a feverish reaction, which on analogical grounds I have named Herxheimer's reaction.

4. One of the first symptoms in connexion with the reaction to the smalarina stimulus is the rapid diminution of the splenic enlargement.

5. It is consequently necessary, as I have already pointed out, that the after-care of the patients be continued sometimes for one or two months. During this time the characteristic symptoms of the disease are gradually disappearing and a general improvement in health becomes manifest.

Let us consider now the action of smalarina. Since this compound is not a febrifuge, it is hardly reasonable, for all practical purposes, to expect that the fever should abate after its administration. I have never maintained the febrifuge action of smalarina. Dr. Low and Dr. Gregg have done well in giving quinine in their cases, but quinine would have not been either advantageous or necessary in the subacute, chronic, masked, and latent malaria forms. Although no clinical control was carried out by using quinine alone, the rapid recovery which the patients made on the administration of quinine, and the rapid diminution of the splenic enlargement in the cases reported, should surely cause some surprise if that effect is attributed to the quinine. Either the recovery is a symptomatic one, manifested in the cessation of fever and the disappearance of the parasites from the peripheral blood-stream, but leaving the patient still infected with malaria, or it may be considered as sterilisation with a rapid improvement of the subject and rapid diminution or disappearance of the splenic enlargement. In the first alternative the quinine may really be the effective factor, in the other this drug may not play any part, but we may be dealing with the self-protective action of the tissues, as in recoveries which are spontaneous or are provoked by a biological stimulus. If Dr. Low and Dr. Gregg follow up their three patients they will discover that the splenic enlargement has entirely disappeared and that the fever will not recur. This result never occurs after such brief treatment with quinine. The whole malaria problem belies such optimism.

To obviate certain mistakes in such clinical experiments I should like to make the following points clear. When we treat a patient with smalarina, we must forget our ideas on the pharmaceutical therapy, particularly on the usual method of treatment. The practitioner usually takes note of the most evident symptom, the fever, which indeed does not represent the disease (nor when it disappears has the disease been eradicated), but he does not take note of the deep-seated constitutional lesion which is produced by an hereditary defect. The new biological therapy produces an organic reaction occurring at various times according to the organism in question. It represents, therefore, a result of a natural law and arises when Nature wishes. If we treat a patient with the new method and expect some determined results at a fixed time, that means we claim that our law is superior to natural law.

By limiting himself to observation of results the malariologist will not only see his patient's recovery but also a series of very interesting and unexpected phenomena, as did those colleagues who have obtained fortunate results by following the method according to the rules that I have suggested. Treatment will not be successful if carried out under wrong conditions. The bad results, however, that we obtain in these cases appear to be only transitory, and the proof of this lies in the fact that we clearly see the advantages of the new method when we follow up the patients for some time after treatment. Chemical therapy, as rapid as it is ephemeral, has made us accustomed to expect some prompt results, and when these are not forthcoming we say the therapy has failed. If, however, a therapeutic method can produce an organic reaction (feverish reaction) after 10–15 days of treatment and a sterilisation after one or two months, it is evident we are dealing with something which is not a "pharmaceutical" treatment. Until we have thoroughly and at length experimented with this "something," we cannot say it has failed to produce the desired results.

The cases and method of application of Dr. Low and Dr. Gregg do not conform to the postulates I have established—namely, a rigorous application of some therapeutic rules that I have published after many years of diligent research.

I am, Sir, yours faithfully,

Rome. GUIDO CREMONESE.

## JOURNALS FOR MEDICAL MISSIONARIES.

*To the Editor of* THE LANCET.

SIR,—May I, through your columns, make known the need of medical literature for members of the medical profession who work in hospitals scattered over the world? I have at the moment three requests for THE LANCET, and would gladly supply addresses to which such literature should be sent regularly.

I am, Sir, yours faithfully,

JANET BRADBURY,
S.P.G. Sec. for Medical Literature.

Darenth House, Sandgate, Kent, Sept. 19th, 1925.

## MACLEAN'S "LAG" BLOOD-SUGAR CURVE.

*To the Editor of* THE LANCET.

SIR,—MacLean has specially called attention to a peculiar disturbance of blood-sugar regulation characterised by what he calls the "lag" blood-sugar curve.[1] By this name he denotes a condition in which, when a sugar-tolerance test is performed in the way he describes,[2] blood-sugar rises above the normal threshold value of about 0·18 per cent. within half an hour after the ingestion of sugar, but goes down again very quickly and is quite normal within two hours (or, in the old, within three hours) after the ingestion of sugar. A more or less important glycosuria is also produced.

A point of great practical importance is the prognostical significance of this type of blood-sugar curve. For the present, MacLean takes the view that "a patient who gives this lag type of curve, but *who shows no delay in the return of blood-sugar to normal after ingesting sugar*, is probably not suffering from a defect which is likely to prove prejudicial to his carbohydrate metabolism."

I have recently seen a case which has, I believe, some interest from this prognostical point of view.

J. M., aged 66. Thirty-six years ago sugar was found in the urine. A slight food restriction banished the glycosuria, which was constantly found absent so long as the food restriction was maintained. A few years later both food restriction and urine examinations were discontinued until 1918, when a urine analysis was again performed and sugar was found. Since then the analyses have been frequently repeated and glycosuria has always been found, varying from traces up to 3·0 per cent. Changes in glycosuria have been found to correspond with those in the diet. Food restriction was never very serious, bread and potatoes, for instance, being never omitted. No diabetic symptoms were noticed at any time. The patient has always felt very well and vigorous. At present he is an exceedingly healthy-looking old gentleman, is not, and has never been, over weight, and his blood pressure is 120/75.

A blood-sugar tolerance test, with 50 g. sugar, performed on Sept. 2nd, 1925, gave the following figures:—

| | Blood-sugar per cent. | | Urine sugar per cent. |
|---|---|---|---|
| Fasting .. .. .. .. | 0·11 | .... | Nil |
| 30 minutes after ingesting sugar | 0·205 | .... | — |
| 2½ hours " " " | 0·10 | .... | 1·3 |

The main interest of this case lies in the fact that a blood-sugar regulation disturbance of the "lag" curve type has existed for at least 36 years, neither being the cause of any clinical disturbance except glycosuria, nor showing any tendency to pass into a true diabetes, despite the fact that no serious diet has ever been kept and that, probably, glycosuria has constantly been present, except for a short number of years after it was first discovered. This

[1] Hugh MacLean: Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes, second edition, London, 1924, p. 42.

[2] Loc. cit., p. 31.

case is therefore strongly in favour of MacLean's optimistic opinion on the prognostic significance of the "lag" blood-sugar curve. It is also of interest to remark that in this case of non-diabetic dextrosuria, as, probably in all those of the same type, changes in diet are followed by changes in the daily excretion of sugar of the same type as those met with in true diabetes, in opposition to what is seen in typical renal glycosuria and other non-diabetical glycosurias. This fact emphasises the importance of performing sugar-tolerance tests, with blood-sugar determinations, in all cases of glycosuria in which the diabetic nature of this symptom is not quite evident, even when it may seem possible to exclude renal glycosuria and other non-diabetic glycosurias, such as lævulosuria, pseudo-lævulosuria, &c.

I am, Sir, yours faithfully,

R. CARRASCO-FORMIGUERA.

Barcelona (Catalonia), Sept. 12th, 1925.

## LUMINAL IN EPILEPSY.

*To the Editor of* THE LANCET.

SIR,—I have read, with great interest, the letter of Dr. Hildred Carlill in THE LANCET of Sept. 19th on a case of luminal poisoning. For the last three years I have had the opportunity of studying the action of luminal and I have found that, except in cases of epilepsy, in which cases the number of fits was reduced very considerably, the drug was very disappointing. The dose we give here is 2 gr. twice daily. Larger doses when tried as a sedative or hypnotic have not given satisfactory results, in fact very disappointing, as the patient becomes stuporous, restless, and in a few cases the sphincters were relaxed. Gradual decrease in the dose of luminal is essential, but a sudden cessation may cause the same symptoms as a large dose.

I am, Sir, yours faithfully,

S. GROSSMAN,

Assistant Medical Officer, Cardiff City Mental Hospital.

Sept. 22nd, 1925.

# Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship of Medicine will hold a series of lectures on Tuberculosis in the Lecture-room of the Medical Society, 11, Chandos-street, in October. The opening lecture will be delivered on Oct. 12th at 5.30 P.M. by Dr. L. S. Burrell on Tuberculosis from the Physician's Viewpoint. There is no fee for this series, and all members of the medical profession will be welcomed. During October there will also be held the following course: Diseases of the Throat, Nose, and Ear at the Central London Throat, Nose and Ear Hospital (an operative surgery class will also be held); a course in Tropical Medicine, consisting of eight clinical demonstrations on Tuesdays and Thursdays; a combined course in Diseases of Children at the Paddington Green Hospital, Victoria Hospital, and Children's Clinic; a course in Urology at St. Peter's; and a course in Dermatology at St. John's. Copies of any syllabus, together with the Fellowship programme, may be obtained from the Secretary, at 1, Wimpole-street, W. 1.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.—The distribution of prizes to students by Sir Herbert Waterhouse will be made in the out-patients' hall of the hospital on Monday, Oct. 5th, at 3.30 P.M.

UNIVERSITY OF LONDON: UNIVERSITY COLLEGE.—On Monday, Oct. 5th, and Tuesday, Oct. 6th, 10 A.M. to 1 P.M., first-year students of the Faculty of Medical Sciences will be received by the Senior Tutor, the Dean of the Faculty, and the Sub-Dean. On Monday, Oct. 5th, 2.15 to 4 P.M., students of the Faculty of Medical Sciences other than first-year will be received; on the same day at 3.15 P.M. candidates for the Diploma of Public Health will be received by Mr. Delafield, Acting Head of the Department. The new buildings for anatomy, anthropology, embryology, histology, and physiology, provided by the gift of the Rockefeller Foundation of New York, are now in full use. The list of public lectures includes six on the Study of Man by Prof. G. Elliot Smith and Dr. C. F. Sonntag, and one on the Photochemistry of Vision by Prof. Fritz Weigert of the University of Leipzig. There will also be eight lectures on the Physiology of Hearing and Vision, which will be given by Mr. R. J. Lythgoe on Mondays and Wednesdays at 5 P.M., starting on Oct. 12th.

LECTURES AT KING'S COLLEGE.—A course of ten lectures on the Histology of Nerve Tissues and Paths of Conduction in the Central Nervous System will be given by Dr. C. Da Fano at King's College, at 5 P.M., on Thursdays during the present session, beginning on Oct. 8th.

THE People's League of Health has awarded a travelling scholarship to Miss Alice Gilby, who is a second-year medical student at the London School of Medicine for Women.

AT the third annual general meeting of the British Provident Association for Hospital and Additional Services, held on Sept. 21st, a resolution was passed expressing the Association's appreciation of the services of the late Dr. J. F. Gordon Dill in the cause of the voluntary hospitals of this country.

IMPERIAL SOCIAL HYGIENE CONGRESS.—The British Social Hygiene Council, which was lately the National Council for Combating Venereal Diseases, is organising a congress to be held at Wembley from Oct. 5th to 7th under the presidency of Sir Auckland Geddes. Distinguished representatives of the Dominions have agreed to take part in the discussions, and addresses will be given by Mr. L. S. Amery (Colonial Secretary), Mr. Neville Chamberlain (Minister of Health), and Lord Willingdon. The problem of venereal disease as it affects the Empire will be fully discussed.

CORK DENTAL HOSPITAL.—The honorary staff of this hospital, which forms part of the North Infirmary, have resigned in a body on a number of grounds. The staff complain, generally, that the committee of management have "persistently ignored" their recommendations, even upon matters regarding which they are especially qualified to advise, and, more specifically, that they were not consulted upon the opening of the hospital at night, and that two salaried appointments were recently made in face of their opposition. The honorary staff has been invited to a conference with the committee of management and has been asked to continue duty in the meantime.

LONDON MEDICAL EXHIBITION.—From Oct. 5th to 9th the medical profession will again have an opportunity to taste, see, or handle the products of our leading drug houses and scientific manufacturing firms at the Central Hall, Westminster, S.W. The London Medical Exhibition, which is open to medical men only, will comprise the most recent organo-therapeutic, bacteriological, and pharmaceutical remedies and prophylactics; electro-therapeutic apparatus; scientific dietary; surgical instruments; hospital furniture and medical appliances, diagnostic material, and apparatus; pathological and physiological apparatus; artificial limbs, aids in invalidity and deformity; sick-room requisites; natural and artificial hydrotherapy; professional literature; hygienic clothing, and so forth. Invitation cards can be obtained from the secretary of the exhibition, 194–200, Bishopsgate, London, E.C., or at the Central Hall during the exhibition. The exhibition is exclusively for members of the medical profession.

DONATIONS AND BEQUESTS.—By the will of the late Mrs. Catherine Ada Potter, of Llandaff, the testatrix left £1000 to Cardiff Royal Infirmary "to endow a bed in a ward to be called the Catherine Ward," and £100 in addition "on condition my grave is kept in good order and looked after by such infirmary." Among other bequests she left £100 to the Cardiff Blind Institution.—The Manchester Royal Infirmary has received £10,000 on account from a legacy by the late Miss Ann Russell.—Mrs. Ellen Margaret Smith, Aughton, Lancashire, who left £12,914, besides other bequests, including certain sums to her husband, left on his death £500 each to the School for Indigent Blind, Liverpool, the Hospital for Women, Liverpool, and the Ormskirk District Nursing Association.—The Christie Hospital, Manchester, has received a donation of £1000 from Mrs. Taylor, of Whalley Range, to endow a bed in memory of her husband and brother-in-law, Mr. Henry Marsland Taylor and Mr. James Henry Taylor, two of Manchester's oldest solicitors.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

## SOCIETIES.

**ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.**

**Thursday, Oct. 1st.**

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

*Specimens:*

Mr. Beckwith Whitehouse: (1) Endometrioma invading Bladder, from a patient who had never menstruated. (2) Intra-ligamentary Endometrioma.

*Short Communications:*

Mr. A. C. Palmer: Acute Purulent Salpingitis at the Third Month of Pregnancy.

Dr. A. P. Thomson and Dr. Lamb: Malignant Endometrioma with Metastases in the Lungs.

*Paper:*

Dr. I. C. Rubin, of New York (introduced by Mr. Clifford White): Diagnostic Value and Therapeutic Application of per-Uterine Insufflation of the Fallopian Tubes in Cases of Sterility.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.

MONDAY, Sept. 28th, to SATURDAY, Oct. 3rd.—WESTMINSTER HOSPITAL, Special Post-graduate Course in General Medicine and Surgery, and the Special Departments. 10.30 to 5.30 daily. Demonstrations, lectures, &c. Second week.—HOSPITAL FOR CONSUMPTION AND DISEASES OF CHEST, Brompton. Post-graduate Course in Diseases of the Chest. Operations, lectures, lecture-demonstrations, demonstrations of surgical cases, of cases in wards, and in special departments. Second week.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Lecture-demonstration on Treatment by Electrotherapy on Wed., Sept. 30th, and the two succeeding Wednesdays at 5.30 P.M., by Dr. C. B. Heald: The Diathermy Current—Its Uses and Application.

OPENING OF LONDON MEDICAL SCHOOLS.

TUESDAY, Sept. 29th.—GUY'S HOSPITAL. Address by Major Ian Hay Beith (Ian Hay).

THURSDAY, Oct. 1st.—ST. BARTHOLOMEW'S HOSPITAL. Old Students' Annual Dinner in Great Hall of Hospital. Chairman: Mr. J. Adams.—CHARING CROSS HOSPITAL. Annual Dinner.—ST. GEORGE'S HOSPITAL. School Dinner at Hyde Park Hotel. Chairman: Dr. Ashton Warner.—KING'S COLLEGE HOSPITAL. 2.30 P.M., Introductory Address by Sir Arthur Keith. 7 P.M., Annual Dinner of Past and Present Students at Connaught Rooms, Great Queen-street.—LONDON HOSPITAL. Annual Old Students' Dinner, Trocadero Restaurant, Piccadilly Circus.—MIDDLESEX HOSPITAL. 3 P.M., Prize Distribution in Queen's Hall by Hon. Sir Arthur Lawley; Inaugural Address by Dr. C. E. Lakin on Tradition in Medicine. Annual Dinner, New Criterion Restaurant, Regent-street. Chairman: Sir Arnold Lawson.—WESTMINSTER HOSPITAL. 3 P.M., Inaugural Address by Prof. A. E. Gardner in Board Room of Hospital.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Sept. 29th.—4.15 P.M., Mr. H. H. Rayner: A Survey of the Treatment of Duodenal Ulcer.

FRIDAY, Oct. 2nd.—4.15 P.M., Dr. E. M. Brockbank: High Blood Pressure as a Cause of Disablement in Workers.

# Appointments.

DOW, D. R., M.D., Ch.B. St. And., D.P.H., has been appointed to the Chair of Anatomy, University College, Dundee.

GIRI, D. V., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., .O. Oxf., Honorary Surgeon to the Royal Eye Hospital, Eastbourne.

HEWAT, A. F., M.B., Ch.B. Edin., F.R.C.P. Edin., Acting Physician to the Chalmers Hospital.

MUIRHEAD, JANET L. A., M.B., Ch.B. St. And., Tuberculosis Officer for the Burgh of Arbroath.

WOLFENDEN, H. F., M.D., F.R.C.S., Honorary Surgeon, Royal Infirmary, Liverpool.

Queen Charlotte's Maternity Hospital: LANKESTER, A. L., M.R.C.S., L.R.C.P. Lond., Senior Resident Medical Officer, and NELKEN, G. J. V., B.S. Lond., Assistant Resident Medical Officer.

# Vacancies.

*For further information refer to the advertisement columns.*

*Bath, Royal United Hospital.*—H.P. £125.
*Belgrave Hospital for Children, 1, Clapham-road, S.W.*—H.S. and Asst. H.P. Each at rate of £100. Also Asst. S. 50 guineas.
*Birmingham General Hospital.*—Asst. S. £50.
*Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.*—S.
*Colchester, Essex County Hospital.*—Radiologist.
*Delhi, India, Lady Hardinge Medical College and Hospital.*—Radiologist. Rs.750.
*Eastern Dispensary, Leman-street, E.*—P. £65.
*Hackney Hospital, 230, High-street, Homerton, E.*—Jun. Asst. M.O.
*Hospital for Epilepsy and Paralysis, Maida Vale, W.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.
*Hospital for Sick Children, Great Ormond-street, W.C.*—H.S., H.P., and Asst. Cas. O. Each at rate of £50.
*King's College Hospital, Denmark-hill, S.E.*—Clin. Assts. Med. and Surg. Out-patient Officers, &c.
*Lucknow University.*—Prof. of Surgery. Rs.1200–50–1400.
*Manchester, Ancoats Hospital.*—Asst. Surg. Reg. £40.
*Manchester Babies Hospital, Burnage-lane, Levenshulme.*—Res. M.O. At rate of £125. Also Clin. Asst. At rate of £50.
*Manchester Royal Infirmary.*—Res. M.O. and Asst. M.O. At rate of £200 and £100 respectively.
*Mental Hospitals Service under the L.C.C.*—Eighth Asst. M.O. £432.
*Mildmay Mission Hospital, Austin-street, Bethnal Green, E.*—Asst. Cas. O. At rate of £100.
*Miller General Hospital for South-East London, Greenwich-road, S.E.*—Pathologist. £500.
*Norfolk County Council.*—Asst. Tub. O. £600.
*Norwich City.*—Temp. Asst. Sch. M.O. £11 11s. weekly.
*Paddington Green Children's Hospital, W.*—H.P. and H.S. Each at rate of £150.
*Royal Chest Hospital, City-road, E.C.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.
*Royal National Orthopædic Hospital, 234, Great Portland-street, W.*—Registrar. £100 guineas.
*Royal Northern Hospital, Holloway, N.*—P.
*St. Luke's Hospital, Chelsea, S.W.*—Third Asst. M.O. £325.
*St. Pancras Metropolitan Borough.*—Asst. M.O. £600.
*Salford Royal Hospital.*—Radiologist. £300. Also Med. Reg. £250.
*South Shields County Borough.*—Ven. Diseases M.O. £750.
*South Shields, Ingham Infirmary.*—Jun. H.S. £150.
*Throat Hospital, Golden-square, W.*—Two H.S.'s. At rate of £100. Also Hon. Surg. Reg.
*Torquay, Torbay Hospital.*—Res. M.O. £200.
*Whipps Cross Hospital, Leytonstone.*—Specialist Consultant in Light Treatment. £300.
*Willesden Urban District Council.*—Two M.O.'s. Each £600.
*York City Mental Hospital, Fulford, York.*—Asst. M.O. £440.

# Births, Marriages, and Deaths.

## BIRTHS.

BUCHANAN.—On Sept. 13th, at a nursing home, the wife of John V. Buchanan, M.B., Ch.B., Dale House, Shaw, Lancs, of a daughter.

COLLINS.—On Sept. 11th, at Garden Reach, Buckhurst Hill, the wife of Dr. F. Garland Collins, of a daughter.

LYNHAM.—On Sept. 10th, the wife of Dr. J. E. A. Lynham, of The Moorings, Matham-road, East Molesey, of a son.

## MARRIAGES.

DUGUID—BENZIE.—On Sept. 17th, at King's College Chapel, Old Aberdeen, John Bright Duguid, M.D., Lecturer on Morbid Anatomy, Manchester University, to Agnes Mildred Emslie, M.B., Ch.B., D.P.H., elder daughter of Mr. and Mrs. A. Emslie Benzie, of Morkeu, Cults, Aberdeenshire.

## DEATHS.

GATLEY.—On Sept. 20th, at Surbiton-road, Kingston-on-Thames, Henry Ralph Gatley, M.R.C.S., aged 67.

KIRKNESS.—On Sept. 19th, at The Haven, Pembury, Tunbridge Wells, suddenly, of pneumonia following influenza, William Ronald Kirkness, M.R.C.S., L.R.C.P.

RUSSELL.—On Sept. 20th, at Haytor, Devonshire, James W. Russell, M.A., M.D., F.R.C.P., of Chad-road, Edgbaston, Birmingham, in his 63rd year.

RYAN.—On Sept. 18th, at The Laurels, Crumlin, Mon., Edmond Ryan, M.D.

SALAMAN.—On Sept. 19th, at Bayswater-terrace, London, Colonel S. M. Salaman (I.M.S., retd.), aged 81 years.

STEELE.—On Sept. 15th, Henry Francis Arthur Steele, M.R.C.S., aged 75.

WEBB.—On Sept. 13th, at Haverstock-hill, Vere George Webb, M.R.C.P.I., aged 73.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## SELECTION OF COD-LIVER OILS FOR MEDICINAL USE.[1]

BY J. C. DRUMMOND, D.Sc., F.I.C.,
PROFESSOR OF BIOCHEMISTRY, UNIVERSITY COLLEGE, LONDON.

IT is almost generally accepted at the present time that the beneficial influence exerted by cod-liver oil on certain conditions of malnutrition is due largely to the presence in relatively high concentrations of at least two organic substances provisionally classed as vitamins. Older theories that ascribed the action to the peculiar nature of the unsaturated fatty acids in fish liver oils, or to the traces of iodine which they frequently contain, have been disproven by the demonstration that the material which resists saponification when the oils are treated with an alcoholic solution of caustic alkalies, and which can then be separated by extraction of the soap solution by suitable solvents, contains all the active substances. Such material from the method of its preparation can contain no unsaturated fatty acids, nor is it found to contain even minute traces of iodine.

### *Source of Vitamins in Cod-liver Oil.*

In collaboration with Dr. Zilva, of the Lister Institute of Preventive Medicine, the writer has for a number of years past carried out an exhaustive series of researches to ascertain the source of the vitamins in cod-liver oil, and the cause of the variations which occur in the amount present. The result of these studies is not without some practical interest to the medical practitioner, because quite a number of views seem to be still widely held that have been found by us to have no foundation in fact.

In the first place may be mentioned the old idea that the almost black or dark brown oils prepared by the now almost obsolete process of "rotting" the livers were much more valuable than the clear white oils that are generally sold to-day. For this view we found not the slighest experimental support; indeed, we were inclined to believe that the exposure of the "rotting" oils in vats to the open air and sunshine for considerable periods tended to decrease their vitamin content by causing oxidation.

The introduction of the modern method of steaming the absolutely fresh livers and thereby obtaining a clear white oil rapidly brought about the disappearance of the dark brown oils as medicinal agents, and led to a demand for higher grade products. Although the "steaming" process appears first to have been used by an Englishman, Charles Fox, as early as 1848 in Newfoundland, its widespread adoption is probably due more to the labours of Peter Möller in Norway during the second half of last century. He operated factories in the neighbourhood of the Lofoten Islands, and a few years after the introduction of the improved method of extraction Norway was producing clear white oils of a much higher grade of quality than formerly. The Norwegian industry, largely centred at that time in the Lofoten Islands, when putting their oils on the market made a strong point of the fact that only livers of the cod were used, and that the oils were extracted from the livers removed from the fish very shortly after they were caught. From this has grown the idea, still widely held especially in trade circles, that only oils from the liver of the cod are of medicinal value, and that Lofoten oils are the best that can be obtained.

### *"Pure" Cod-liver Oil.*

At an early stage in our researches Dr. Zilva and I found that the oils yielded on steaming the livers of other gadoid fish—pollock, haddock, ling, coalfish, &c.—are quite as rich in vitamins as that from the cod's liver. There is, therefore, no justification for demanding that an oil to be used for therapeutic purposes should be a "pure" cod-liver oil. In some cases to make such a demand is to run the risk that a product of rather low vitamin value may be obtained, because, as we have fully described elsewhere, in Norwegian waters "pure" cod-liver oil is only made in the Lofoten and Romsdal areas early in the year when this species is spawning on the shallow sandy banks—a period in the life of the fish when there tends to be a transference of vitamins from the liver to the gonads. There seems to be no doubt from our investigations on the fishing grounds in Norway, Newfoundland, and the North Sea that the chief factor governing the amount of vitamin in the liver of the gadoid fish is their food-supply. When the fish are actively feeding their livers are usually rich in vitamins and yield clear, pale yellow oils of very high medicinal value; on the other hand, when they are practically starving during the spawning period, and are at the same time transferring much fat and vitamin to the reproductive cells, the livers yield an almost white oil of relatively low potency.

It cannot be too strongly emphasised that it is not undesirable that oils should possess a pale lemon-yellow colour. On the other hand, it has been my experience to find that such oils usually possess a higher medicinal value than "white" oils. Only dirty yellow and brown oils, indicating unsatisfactory preparation, are undesirable.

Of the oils derived from Norway, therefore, we have usually found those from the Finmarken coast, where the fishing is carried on from June to August, while huge shoals of mixed gadoid fish pass slowly along the northern coast of Norway feeding actively on smaller species, mainly the caplin (*Mallotus villosus*), to possess the highest vitamin value. Generally speaking, they are found to be from five to ten times more valuable than the average oil prepared in the Lofoten area, although wide variations may occasionally be encountered.

### *High Value of Newfoundland Oils.*

It is of considerable interest in the light of these observations to point out the value of the oils prepared in the Dominion of Newfoundland. Until recently the sale of oils from this source for medicinal purposes was relatively small, and they were practically ousted from the market by the strong preference for Norwegian, especially Lofoten, oils. Dr. Zilva and I ascertained, however, that the Newfoundland oils possess a very high average value as sources of vitamins, and an investigation carried out on the fishing grounds there enabled us to understand why this is so. The main fishing season, during which over two-thirds of the entire annual catch are taken, is in the summer months when the fish are off the east coast of the island, the remainder being caught in spring and winter in the Gulf of St. Lawrence, the Straits of Belle Isle, or off the Labrador coast. During the whole of the main fishing season the fish are actively feeding, early in the summer on the caplin, later on squid and herring. The oils made during this period are, therefore, found to be of high vitamin value, and comparable with the oils made in summer in the Finmarken area of Norway, with the exception that the Newfoundland oils are prepared practically entirely from cod.

Compared with Norwegian oils the proportion made during periods when the fish are spawning is very small in Newfoundland, and it is to this that Dr. Zilva and I are inclined to ascribe the high average value of the Dominion products.

### *Quality of the Oil from the Trade Aspect.*

There remains, however, one important question that is frequently raised when the superior nutritive value of the oils from our oldest colony is emphasised—namely, the quality of the oil as viewed from the trade aspect. In the past the Norwegians have undoubtedly captured the market by the obvious superiority of their products. Their oils have been clear, free from marked coloration, and more particularly from the unpalatable characteristics of oils prepared from old livers or by unsatisfactory processes. To a large extent this superiority was the cause of the strong prejudice against oils other than Norwegian which still survives, but matters are very different at the present time. In 1916, by an Act of the Newfoundland Legislature, the production of all cod-liver oil in the Dominion was put under the control of the Ministry of Marine and Fisheries. Every manufacturer is now required to hold a Government licence, to conduct his preparation according to certain rules laid down to ensure cleanliness, &c., and to permit his factory to be open to Government inspection and supervision. Great care is now taken by manufacturers to comply with the regulations, to see that no discoloured or stale livers are placed in the vats, to remove the gall-bladders, to maintain strict cleanliness of utensils, and in all ways to produce a product of high technical and market quality. A fuller description of the actual process, as now being worked in the Dominion, is given in our report in the *Journal of the Society of Chemical Industry* (1923, lii., 185 T and 250 T).

There should no longer be any prejudice against oils from Newfoundland, and it is fully time that medical men realise that we have within the Empire a source of medicinal cod-liver oil of very high quality in every sense. It may here be remarked that an American group of scientists visited Newfoundland shortly after our investigation had been made and confirmed our conclusions in all essentials. An immediate result of this has been that a number of the chief firms in the United States interested in cod-liver oil, or preparations containing this oil, have decided to erect their own factories in Newfoundland or to employ only oil from that source.

I am indebted to Major Victor Gordon, the High Commissioner for the Dominion of Newfoundland, and to Mr. W. A. Munn for the following figures representing the annual production since 1913. If they be compared with the

[1] This communication was written at our request, as it was found that information concerning Newfoundland cod-liver oil was needed by the medical profession.—ED. L.

figures representing the Norwegian output, for which I am indebted to H.B.M. Consul at Bergen, it will be seen that there is generally an inverse relationship. This opens up an economic question which it is inappropriate to discuss here, but it is certain that Newfoundland could supply much larger quantities of oil for medicinal use in this country if its uniformly high nutritive value were sufficiently appreciated by the medical profession and the public.

*Comparison of Production of Medicinal Cod-liver Oil in the Dominion of Newfoundland with the Export from Norway for the Years 1913–24.*

| Year. | Newfoundland. | | Norway. | |
|---|---|---|---|---|
| | Gallons. | Value (dollars). | Hectolitres. | Kroner per hectolitre. |
| — | 41,000 | 18,122 | — | — |
| 1913 | 45,990 | 69,000 | 45,990 | 69·00 |
| 1914 | 26,000 | 17,010 | 63,025 | 55·00 |
| 1915 | 47,700 | 35,837 | 112,800 | 180·00 |
| 1916 | 142,000 | 254,562 | 56,010 | 360·00 |
| 1917 | 214,000 | 471,629 | 23,399 | 240·00 |
| 1918 | 321,000 | 674,093 | 12,425 | 240·00 |
| 1919 | 342,000 | 832,352 | 35,283 | 344·00 |
| 1920 | 291,000 | 726,852 | 49,347 | 275·00 |
| 1921 | 48,000 | 79,982 | 71,478 | 92·00 |
| 1922 | 48,000 | 28,265 | 65,860 | 92·90 |
| 1923 | 51,000 | 36,967 | 98,290 | 100·70 |
| 1924 | 42,000 | 31,462 | 115,263 | — |

*Oils Prepared in Great Britain.*

In conclusion, brief mention should be made of the oils prepared in this country. Until quite recently the amount of medicinal oil prepared from fish landed at ports in Great Britain was negligible, the livers usually being thrown away or landed in a state of decomposition so advanced as to render them unfit for the manufacture of any form of oil other than commercial "cod oil," a technical product used mainly in the leather industry or for conversion into soap. Within the last year or two certain manufacturers have made arrangements for steaming the fresh livers on board the trawlers at sea, and an appreciable quantity of oil of quite good market quality is now being made for medicinal use. As far as Dr. Zilva and I could determine the average vitamin value of these oils is fairly high, but we have not had the opportunity of making so extensive an examination as we had in Norway and Newfoundland. The fish are caught over a wide area, extending beyond the North Sea to the Faröe Islands, Iceland, and even as far as the White Sea. Probably no great proportion of spawning fish are present in the catch, even in the early months of the year, but we have no definite information on this point. It is certain, from a considerable number of samples that we have examined, that cod-liver oils of good trade quality and high medicinal value can be placed on the market by manufacturers in this country if they are prepared to go to the trouble of working up the livers immediately after the fish are caught. Usually this means the installation of steaming plants, which, however, may be of very simple construction on the trawlers, as the majority of the boats are away from port for periods of from one to six weeks.

## PUBLIC HEALTH IN BOMBAY.

THE population of Bombay at the 1921 census numbered 1,175,914, and at the middle of 1923 was estimated at 1,220,120, on which latter figure the birth and death ratios have been calculated. The birth-rate was 17·20 per 1000; or, if calculated on the census population, the ratio would be 17·85. In that year the birth ratio for the Presidency, as a whole, was 33, and for the city 16. The explanation of this low ratio is stated by Dr. J. E. Sandilands, Executive Health Officer, who presents this report, to be due partly to the custom whereby married women leave the city for their confinement, and so register their children in the mofussil districts where they are born, and partly because some births in the city are not registered. 1487 births were inquired into in 1922 and 1923, and it was found that 63 per cent. only of these infants were born in Bombay, 37 per cent. having been born elsewhere; and, out of 8632 infantile deaths during the year, 31 per cent. occurred in children who had been born outside the city. "Of the infants living and dying in the city it may therefore be assumed that, roughly, one-third were born elsewhere"; if added to the numbers registered, the birth-rate would be increased from 17 to 26 per 1000. The total birth-rate being, however, assumed to be 17·20 per 1000, the variation among different castes ranged from 4·13 per 1000 for Jains and 6·50 for Banias, to 21·01 for Indian Christians, 24·45 for low caste Hindus, 24·82 for Parsees, 28·70 for Anglo-Indians, and 36·71 for Jews. "The impossible rate of 169·59 recorded for Lingaits is obviously due to an understatement of the Lingait population in the census returns." The registered births numbered 146, and the deaths 339; the Lingait population is stated to be 866. Disregarding this group, the death-rate varied from 8·81 among Banias, and 11·45 among Europeans, to 29·24 for Hindus of all castes, 32·10 for Indian Christians, 34·23 in Jains, 34·89 in Anglo-Indians, and 43·73 in Mussulmans. Jains suffered most heavily from plague (2·75 deaths per 1000), the general plague mortality being only 1·08 per 1000; for Hindus of all castes 1·20, and for Europeans 0·13. "The liability to plague is not improbably due to the fact that Jains do nothing to prevent rats entering and living in their houses." Enteric fever was most fatal to the Parsees (0·64), Bhatias (0·53), and Europeans (0·45), the general enteric mortality being only 0·11 per 1000.

*Mortality from All Causes.*

In regard to the mortality from all causes in the different wards and sections of the city, the ratios varied from 16·56 per 1000 (Fort South section of Ward A), and 19·05 (Walkeshwar in Ward D), to 36·90 in Worli section (Ward G), and 42·06 in 2nd Nagpada section (Ward E). The infantile mortality varied from 236 per 1000 births in 1st Nagpada section of Ward E, and 264 in Walkeshwar section (Ward D), to 521 in 2nd Nagpada (Ward E), also in Mandvi (Ward B), 534 in Sion section (Ward F), and 548 in Byculla (Ward E). As the registration of births is faulty, the infantile deaths in relation to the *total population* at all ages are separately stated. This ratio varied from 1·86 per 1000 in Fort South (Ward A) to 9·77 in Byculla section (Ward E), and was 7·07 for the city as a whole. The excessive mortality is largely due to overcrowding; 14,302 births (68 per cent. of the total) took place in families living in a single room or sharing it with others, the infantile mortality being 524·4 per 1000 births. In families occupying two rooms the mortality was 394·5; in three rooms, 255·4; in four or more rooms, 246·5; in hospitals, only 112·2. Much work has been done to remedy this deplorable state of things by visits of nurses, attendance on confinements, provision of necessaries, of maternity homes, milk depôts, and infant welfare centres. The municipal nurses paid 54,402 visits, and attended 1914 confinements. Besides this 1773 cases were admitted to the municipal maternity homes; two infant milk depôts have been established, and the Maternity and Child Welfare Scheme of the Infant Welfare Society has made much progress.

*Infectious Diseases.*

The notifications of infectious diseases numbered 4575, of which total 1501 were for plague, 1274 for tuberculosis, and 978 for small-pox. Plague was epidemic from Feb. 17th to June 2nd, and caused 1329 deaths (1·08 per 1000 population, as compared with 0·67, the quinquennial average). Of these 1202 occurred within the dates mentioned. The case mortality was 89 per cent. No fatal cases occurred in 1st Nagpada section of E Ward, and only one in Upper Colaba. All the other sections suffered more or less, most deaths occurring in Worli (251) and Mahim (172) sections (both in G Ward); and the highest mortality ratios falling on Mahim (3·31), Mahalakshmi (2·02), and Worli (1·98 per 1000). The usual preventive and precautionary measures were continued during the year; infected dwellings were evacuated and disinfected, and temporary health camps established; 13,749 inoculations were performed; 725,574, rats destroyed, of which 305,283 were examined at the Parel laboratory, 2·77 per cent. being found to be infected. The percentage of infection rose from 1·63 in January and 3·55 in February to 6·75 and 7·42 in March and April. It then declined to 2·10 in June and 1·27 in July, and was below 1·0 per cent. for the rest of the year.

Small-pox was prevalent throughout the year, 978 cases being registered, of which 479 were fatal, compared with 130 cases and 61 deaths in 1922. The mortality ratio was 0·39 per 1000, as compared with 0·48, the quinquennial average. No fatal cases occurred in Upper Colaba. In the other sections the mortality was below 1·0 per 1000 in all except 1·04 in Fanaswadi (C Ward) and 1·21 in Chowpati (D Ward). The total primary vaccinations performed numbered 20,293, of which 97·65 per cent. were known to be successful. In addition, 21,725 persons were revaccinated. Of the 87 infants under 1 year of age who died from small-pox, 65 were not vaccinated, and one was vaccinated during the incubation period. In the remaining cases the vaccinal condition was not ascertained, a most regrettable omission.

Cholera was much more prevalent in the city than in the previous year. There were 323 attacks and 189 deaths, as compared with 22 and 15 in 1922; 41 of the cases were imported. No fatal cases occurred in Upper Colaba, Fort South, 2nd Nagpada, 1st Nagpada, or Sion sections. In the remainder, 39 deaths occurred in Market section, and 43 in the adjoining Dhobi Talao, giving death ratios of 1·08 and 1·00 per 1000 respectively. There were two outbreaks. The first (June 6th to 27th) occurred among the Mohammedan pilgrims, coming from distant provinces and

proceeding to Mecca; 16,961 passed through Bombay. They were accommodated as far as possible in three "Mussaferkhanas"; but as these buildings could not hold as many as 2000, many pilgrims had to be lodged in hired buildings with inadequate sanitary arrangements, or were encamped on the open spaces outside the Mussaferkhanas. Two cholera cases occurred in pilgrims arriving from infected provinces. During the month there were 25 attacks and 17 deaths. Sanitary measures were carried out, and 5965 pilgrims were inoculated with anticholera "vaccine"; the spread of the disease was checked. The second outbreak occurred among the city residents. There were 274 attacks and 155 deaths between July 16th and the end of August. The disease had prevailed in Poona, Ahmednagar, and other parts of the province, and "ample opportunities existed for the introduction of infection from the outside." Chlorination of the water-supplies was carried out, and inoculation stations opened, where 1719 persons were treated.

Influenza was registered as causing only 250 deaths (0·20 per 1000), as compared with 1·77 per 1000, the quinquennial average; but respiratory diseases, to which influenza deaths are frequently attributed, caused 14,099 deaths, as compared with 13,614 in the previous year. Tuberculosis caused 1371 deaths (1·12 per 1000), a satisfactory continuation of the improvement during recent years. In the decennium 1913–22, the mortality had averaged 1·95, and in 1922 it was 1·22 per 1000. The work carried on by the King George V. Antituberculosis League was taken over by the municipality in July. There are two dispensaries in the city, and a sanatorium with 32 beds on Bhoiwada Hill, Parel, known as the Turner Sanatorium; 1129 cases were treated at the dispensaries, and the medical officers visited 1258 patients too ill to attend personally.

Malaria was registered as the cause of 403 deaths, the diagnosis being verified in each case. In addition 2692 deaths were returned as due to "Ague and Remittent Fevers"; many of these may have been due to typhoid, tuberculosis, or influenza, in which fever may be a prominent symptom. Spleen examinations (10,553) were carried out among children in all of the 31 sections of the city except four (Kamatipura, Parel, Sewri, and Mahim). No splenic enlargement was found among 126 children in Fanaswadi section of Ward C. The total cases of enlargement numbered 936 out of 10,553 children examined, the ratios varying from 1·2 per cent. in Kumbharwada and 1·4 in Bhuleshwar (both in Ward C), to 10·67 in Tarwadi (Ward E), 10·86 in Fort South (Ward A), 13·7 in Sion (Ward F), 14·88 in Fort North, and 16·82 in Colaba (Ward A). It is regrettable to find that, in the report of the municipal laboratory, out of 4267 milk samples analysed 41·3 per cent. were adulterated. In Ward F the ratio was 62·9, and in Ward G 70·6 per cent.

## AN UNUSUAL CAREER.

INFANT prodigies are always interesting in their infancy, but very few of them remain at all noteworthy in their later years. William Robert Grossmith, the son of a Reading picture-frame maker, was something of an exception to this rule. After an astonishing career as a child actor at 6 years old he lived to give his name to the firm of W. R. Grossmith, of Burleigh-street, Strand, which continues to make artificial limbs under its auspices. William Robert Grossmith (1818–99) was the elder brother of George Grossmith, the journalist and entertainer, who founded the branch of the family celebrated as humorists and actors. In many ways William was the more remarkable child. His abilities astounded his family before he could lisp, and when he was 6 years old his father took him to London to see James Jones, the founder of the Coburg Theatre, which has now become the Old Vic. Jones was so struck with his precocity and brilliance that he was allowed to appear at the Coburg in 1824 with songs as a Jew and as a country bumpkin. In a later appearance as Richard III. he got an excellent press. Even the *Times* was moved to remark: "We were much gratified with the performance of the Infant Grossmith, who really exhibits a most wonderful theatrical talent, and which, if well cultivated, will at a future period produce some brilliant acting." He then performed for a week each at the Surrey and Sadler's Wells; but his father declined further engagements, and he returned home. His development could not, however, be stayed, and in a short time he increased his repertory to include violin-playing, recitations, and mimicry, the acting of several Shakespearean characters, and the playing of "musical glasses." A small movable theatre was built for him and he set out on a series of tours of England, starting in his native town, where he entertained 300 people for nearly three hours with dance, drama, and song. His remarkable powers won him the title of The Young Roscius, in contrast to that of The Infant Roscius, conferred on William Betty (1791–1874), who made a fortune and retired at 17. Grossmith became so famous that a short book ("The Life and Theatrical Excursions of William Robert Grossmith, the juvenile actor, not yet nine years of age," 1827, Reading) ran through at least two editions. It is not known when he left the stage, although it is certain that he did not continue on it in manhood. He was apprenticed to the business of an artificial limb-maker with John Henry Sleath, the inventor of the kneeling artificial knee, who had started business in 1760. Grossmith succeeded to the business in 1843, and in 1857 set forth his story in a pamphlet entitled "Amputations and Artificial Limbs," dedicated to William Lawrence, F.R.S., President of the Royal College of Surgeons. He became a charming old man, and throughout his life retained the sense of humour which had made him a comedian at six years of age.

## RIVIERA TRAVEL.

THE Sleeping Car (Wagons-Lits) Company announces the preliminary arrangement for its winter service from Calais direct to the Riviera. The Calais-Mediterranean Express (the Blue Train) will commence running in connexion with the 10.45 A.M. Pullman train from Victoria on Friday, Nov. 6th, and will run via Paris until Feb. 9th, after which date it will run daily direct from Calais to the Riviera without calling in Paris, a separate "Blue Train" being run from Paris daily from Feb. 10th. Six other daily services will run to the Riviera from Calais, and from Paris, with improved sleeping cars. Plans for the return journeys of these services will be kept in London to enable passengers to secure the required accommodation for the homeward journeys before leaving London. Bookings may be made at 20, Cockspur-street, London, S.W. 1.

## APPARATUS FOR ACTINO-THERAPY.

WE have reached the season when the sun is below the horizon for half or more of the 24 hours, and the oblique rays, even when there is no cloud, are largely absorbed by water-vapour and atmospheric impurities. Hence all the supplies of artificial light are of enhanced value.

The tungsten arc lamp made by the Medical Supply Association (167-185, Grays Inn-road, London, W.C. 1.) is very well and elaborately constructed, and is useful for ultra-violet radiation when only a low amperage current is available. The electrodes used are either carbon or tungsten. The method of interchanging the electrodes could be simplified. The electrodes are adjusted by a simple, hand-controlled, regulating screw, and a spring release for adjusting the distance between them. This gives a steady burning arc, but the length of the flame and voltage across the arc varies as the carbons burn away. The lamp is made of a highly polished metal; the inner side of the lamp reflector tarnishes rapidly and gets a white deposit of metallic salts, which is difficult to clean. The focusing of the arc is not well centred, and the arrangement of the quartz lens adapter for localised treatment might be improved. The ultra-violet energy is good for near distances up to 18 in., but falls off rapidly beyond 24 in., owing to the diffused scattering of the rays.

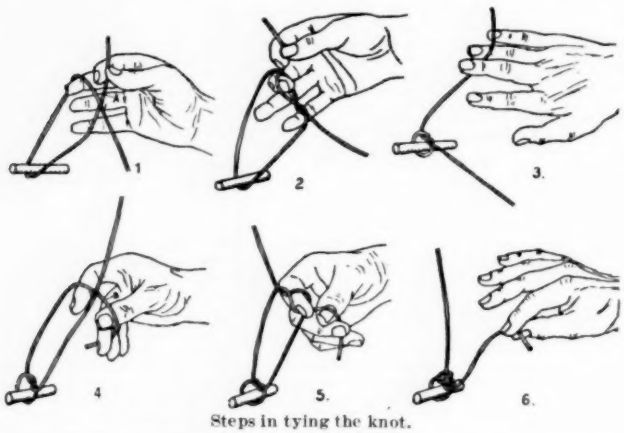
The mercury-vapour lamps manufactured by Messrs. Kelvin, Bottomley and Baird, Ltd. (51–52, Fenchurch-street, London, E.C. 3) are of the atmospheric type. When the current is switched on, the arc is started by means of a small heating coil which surrounds a limb of mercury projecting from the arc tube. The mercury is heated up in this limb by means of the heating coil; when the mercury boils the arc is established, and the heating coil is automatically cut out of the circuit. Lamps of many descriptions and different shapes are made for local and general light treatment. They are very steady in burning and require no attention when started. The ultra-violet energy is very high, and is very constant. The quartz is made by the Thermal Syndicate, and is of a good quality. The lamp is economical and easy to run, and shows very little deterioration with prolonged use. Up to the present such lamps can only be made for direct current, but it is anticipated shortly to supply alternating current burners. The K.B.B. lamps are exceptionally useful for all work when a steady and constant service of ultra-violet energy is required.

The Hilger spectrometer is a useful apparatus for detecting ultra-violet rays in artificial sources of light. The spectroscope is a small type, and the rays after passing through the system of prisms is focused on to a uranium glass. The apparatus is still in an experimental stage, and many small alterations are necessary before it will be possible easily to adopt its use.

The interesting catalogue of the Cox-Cavendish Electrical Co., Ltd. (105, Great Portland-street, London, W.,1), collects together the most useful types of lamps now available for artificial sun treatment. It is of great guidance to the practitioner, and each type of apparatus is clearly described and well illustrated. Every endeavour is made to indicate the advantages and best way of utilising these lamps. The catalogue includes all the standard types of lamps, and should be of great assistance in helping to provide for "light" clinics. The literature is well produced, and much useful reference to current literature is adopted. The description of the flaming open carbon arc is clearly expressed and the biological standards are quoted. It is a complete and briefly classified catalogue on photo-therapy.

## A "SINGLE-HANDED" SQUARE KNOT.

Dr. F. G. Meynen, in a current issue of the *Journal of the American Medical Association* (August 22nd, p. 579), describes a simple and easy method of tying a square knot which, once the knack is acquired, possesses the following advantages: It is rapid and cannot fail to tie "square"; only one hand (the right) is directly used; at no time is it necessary to drop either end of the suture—each movement leading naturally with the succeeding one without rearranging the grasp. It is adaptable to all purposes and positions. Dr. Meynen describes the procedure thus: "It is essential to remember that the long end (if there is a choice) should always be grasped by the left hand. In the drawings, for the sake of simplicity, the long end is left free without indicating the left hand. Assuming that the long end comes out of the wound on the far side from the surgeon about to tie the knot (as is the case, for example, when the first knot in a continuous suture is tied by an assistant for the operator), it is grasped by the left hand, while the short end is grasped about 1 inch from the end between the thumb and index finger of the right hand with the palm down. The palm is immediately turned upward with the suture lying across the fingers and the longer end brought into the position shown in Fig. 1. The middle finger is then hooked under the portion of the suture marked *A*, as in Fig. 2; this is drawn through the loop by grasping it between the middle and ring fingers, and first single knot drawn tight as in Fig. 3. The same firm grasp being kept with the middle and ring fingers, the palm is turned somewhat upward, the thumb and first finger being placed under the suture and the long end in the position shown in Fig. 4. The tip of the index finger is then hooked under the portion marked *B*, as in Fig. 5, drawing it through the loop and grasping it between the thumb and index finger as soon as it is through, and the knot is drawn tight and completed as in Fig. 6. Should a third knot be desired, the hand will be found in a position ready to repeat the first manœuvre from Figs. 1 to 3. Should the surgeon be desirous of tying his own suture (in which case the short end will come out on the far side of the wound and the long end on the near), he has only to begin with the manœuvres depicted in Figs. 3 to 6 and end with Figs. 1 to 3.



Steps in tying the knot.

"This method is particularly suitable and rapid for ligating vessels with a long ligature wound around the fingers of the left hand. It must be remembered, however, to begin with Fig. 1, when the long end comes up on the far side of the clamp, and with Figs. 3 to 6 and then Figs. 1 to 3 when the long end comes up on the near side of the clamp. This decision will come instinctively with practice. The knot can be tied easily in two seconds."

## "DORMA" EAR PADS.

THESE pads are designed to relieve sufferers from head noises. They are to be placed in front and behind the ear—there are both single and double pads—where they are retained in position by elastic bands. A point is made of the free circulation of air between the meatus and the pillow on which the patient is resting, and it is claimed that throbbing noises due to heart action, which are sometimes very distressing, are much or wholly suppressed. Under the advice of a medical man the apparatus should prove useful, and our readers might have cases in which they could be employed. The apparatus in the single form costs 15*s.*, and in the double form 25*s.*, from the Dorma Manufacturing Co., 25 and 27, Quadrant Chambers, New-street, Birmingham.

## THE UNMARRIED MOTHER.

THE National Council for the Unmarried Mother and her Child, which has issued its seventh annual report, has to contend against public apathy, and against those whose anxiety for public morality makes them pretend that unmarried parents do not exist. There are also those who think illegitimate children poor specimens best out of the world; those who would fight for the child's welfare, but care nothing for the mother, and those who wish to "rescue" the mother but would allow the child to be adopted. The Council is strongly against separation of the mother and child, from the point of view of both. The death-rate of illegitimate children in their first year (132 per 1000 births in 1923 in England and Wales) is twice that of children born in wedlock, and the Council attributes this partly to artificial feeding or early weaning encouraged by the idea that the child can be adopted. Besides activity on behalf of actual cases—628 during last year—the Council is attempting to get the existing Bastardy and Affiliation Acts reformed. The Legitimacy Act, now almost law, and Captain Bowyer's Bastardy Bill represent some of its aims, which include the hearing of affiliation cases before the child's birth, payment by the father towards pregnancy and confinement expenses, and improvement of the legal position of adopted children. The offices are at Carnegie House, 117, Piccadilly, London, W. 1.

## A USEFUL CATALOGUE.

WE have received from Messrs. May and Baker, Ltd., Battersea, London, an interesting catalogue of their pharmaceutical specialties. The catalogue gives information concerning a number of pharmaceutical products supplied by the manufacturers which have been noted in our columns at different times. The indications for the employment and the technique for the administration of such well-known drugs as arsenobillon, novarsenobillon, and stovarsol are clearly set out, the last two preparations of the firm having been tested biologically by the Medical Research Council and approved by the Ministry of Health. The firm supplies also vaccines for the treatment of gonorrhœa which have been prepared by the pathological laboratory of the London Lock Hospital, as well as some well-known preparations of bismuth.

## THE PRIVATE COUNSELLOR.[1]

IN writing this work the author's desire has been to provide the layman with a book dealing with the more common diseases and derangements of the male generative organs. That there is a deplorable amount of ignorance on the subject of sex with much resulting harm we are convinced. At the same time it is probable that this work by an anonymous medical writer will in the end leave his readers in a worse state than that in which it found them. The pages contain vivid descriptions of the ravages of untreated syphilis and of the deplorable condition of individuals who persist in self-abuse. Thus, in the chapter on syphilis we hear that this disease "breaks down the vigorous and lusty youth, covering the body with loathsome ulcers or destroying the bones, and thus defacing the manly beauty of the human face divine." We fear that the work is calculated to precipitate a breakdown in the person whom it is intended to help. A morality built on fear is a poor thing, and fear is the mainspring of this work. Even if the author does not intend to frighten he will do so. No layman can read a medical work without the risk of believing himself to be the victim of some of the disorders described within its covers, and many a sexual neurosis has resulted from an unwise excursion into medical literature. Whilst believing that the author's intentions are excellent, we deplore the result of his efforts.

---

Col. J. S. Riddell, A.M.S. (T.), C.B.E., M.V.O., has been appointed a Deputy-Lieutenant for Aberdeen.

*T. L. A.*, with whose views we have considerable sympathy, has omitted to enclose his address.

*T. D.*—There seems no room for hypnotic phenomena in the interesting case related, although hypnotists have been known to use light chloroform anæsthesia to aid the induction of a hypnotic state. The case is probably one of a delusional system related to paranoia, inasmuch as intellect is unimpaired and there are no neurotic symptoms. Time will show.

[1] The Private Counsellor. By a Medical Practitioner. London: Educational Press. 1925. With 24 plates. Pp. 197. 6*s.* 6*d.*